

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

NXTGEN TOYS, LLC,
Petitioner,

v.

ZIPSTRING, LLC,
Patent Owner.

IPR2024-01213
Patent 11,674,774 B2

Before BENJAMIN D. M. WOOD, BARRY L. GROSSMAN, and
RICHARD H. MARSCHALL, *Administrative Patent Judges*.

MARSCHALL, *Administrative Patent Judge*.

JUDGMENT

Final Written Decision

Determining All Challenged Claims Unpatentable

Denying and Granting in Part Patent Owner's Motion to Amend

35 U.S.C. § 318(a)

Petitioner NxtGen Toys, LLC challenges claims 1–4, 12, and 15–17 of U.S. Patent No. 11,674,774 B2 (Ex. 1001, “the ’774 patent”), which is assigned to Patent Owner ZipString, LLC. We have jurisdiction under 35 U.S.C. § 6, and we issue this Final Written Decision pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73 (2022). For the reasons set forth below, we determine that Petitioner has shown that all of the challenged claims are unpatentable. We also grant Patent Owner’s Motion to Amend original claim 16 with proposed substitute claim 27, but deny Patent Owner’s Motion to Amend as to the remaining proposed substitute claims.

BACKGROUND

A. Summary of Filings

Petitioner filed a Petition requesting *inter partes* review of claims 1–4, 12, and 15–17 of the ’774 patent. *See* Paper 2 (“Pet.”), 1–2. Patent Owner did not file a Preliminary Response to the Petition. Pursuant to 35 U.S.C. § 314, we instituted an *inter partes* review as to all challenged claims and all grounds raised in the Petition. Paper 6.

After institution, Patent Owner filed a Response (Paper 9, “PO Resp.”), Petitioner filed a Reply (Paper 13, “Pet. Reply”), and Patent Owner filed a Sur-reply (Paper 19, “PO Sur-reply”). Patent Owner filed a Motion to Amend (Paper 10, “MTA”) and Petitioner filed an Opposition to that Motion (Paper 14, “Opp.”). We provided Preliminary Guidance in response to Patent Owner’s Motion to Amend. Paper 16 (“Preliminary Guidance”). Thereafter, Patent Owner filed a Reply¹ (Paper 20, “PO MTA

¹ Patent Owner incorrectly refers to this filing as a “sur-reply,” but to avoid confusion we refer to it as a reply, as set forth in our Scheduling Order. *See* Paper 7, 10, 12.

Reply”), and Petitioner filed a related Sur-reply (Paper 21, “Pet. MTA Sur-reply”).

The record includes a transcript of an oral hearing held on December 4, 2025. Paper 26.

B. Real Parties-in-Interest and Related Matters

Petitioner identifies itself as the only real party-in-interest. Pet. 4. Patent Owner identifies itself as the only real party-in-interest. Paper 4, 2.

The parties indicate that the ’774 patent is the subject of the following infringement action: *ZipString, LLC v NxtGen Toys, LLC*, No. 1:24-cv-00136-TCB (N.D. Ga.) (filed Jan. 10, 2024). Pet. 4; Paper 4, 2.

C. The ’774 Patent

The ’774 patent relates to “a string shooting device having a string capable of generating lift when propelled from the string shooting device.” Ex. 1001, code (57) (Abstract). The shooting device includes “a guide to readily attach and detach the string from the string shooting device.” *Id.* We reproduce Figure 1 of the ’774 patent below to illustrate claimed aspects of the string shooting device.

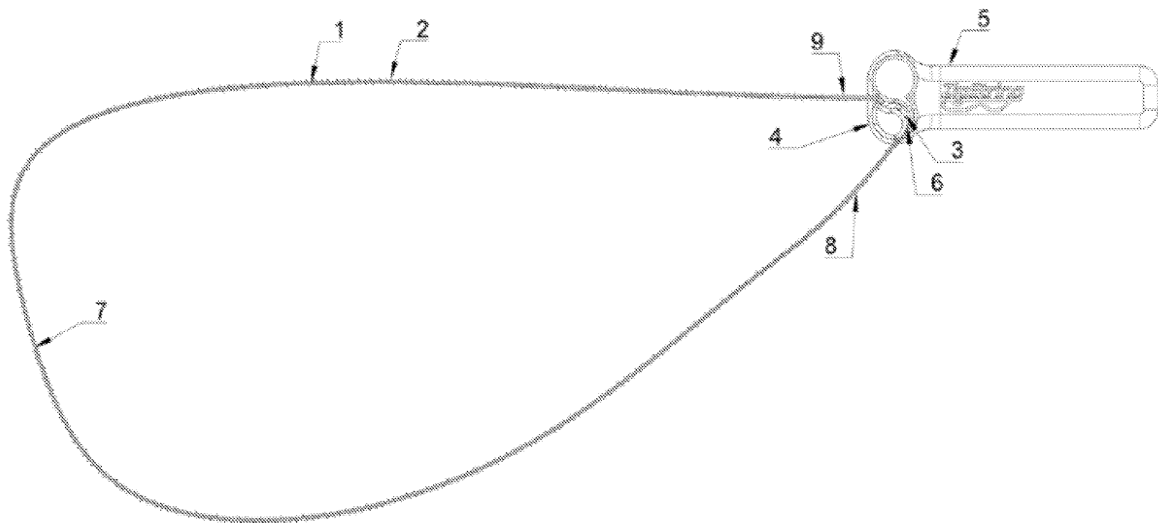


Figure 1 “illustrates a profile view of a string shooter propelling a looped string.” Ex. 1001, 3:5–6. Figure 1 depicts looped string 1 having radiating threads 2, with drive wheel 3, driven by motor 4, propelling looped string 1. *Id.* at 4:52–54. The shooting device includes body 5, which houses a power source such as a battery to power motor 4 and drive wheel 3. *Id.* at 4:58–60. Figure 1 also shows a second wheel opposite drive wheel 3, with the second wheel an idling guide wheel or second driven wheel. *Id.* at 4:63–67.

The ’774 patent emphasizes the “effect of the ‘fuzzy’ surface of the string,” which “magnifies the air friction” and “the positive lift against gravity.” Ex. 1001, 5:14–16. According to the ’774 patent, sufficient lift will “overcome gravitational forces on the distal end 7 of the looped string 1 and give the appearance that the looped string 1 is weightless.” *Id.* at 5:16–19. To create the “fuzzy” appearance and increase lift, the ’774 patent describes using radiating threads 2 of looped string 1 that extend away from the axis of string 1. *Id.* at 5:19–24.

D. The Asserted Challenges

Petitioner challenges claims 1–4, 12, and 15–17 on the following grounds (Pet. 6–7):

Claims Challenged	35 U.S.C. §	Basis
1–3, 12, 15	102	Yeany ²
1–3, 12, 15–17	103	Abello, ³ Yeany

² Yeany, B., *String shooter - String launcher - physics of toys* //// *Homemade Science with Bruce Yeany*, YouTube video dated June 11, 2014, available at <https://www.youtube.com/watch?v=rffAjZPmkuU> (Ex. 1004, “Yeany”).

³ Abello, M. et al., *String Shooter’s overall shape in ambient air*, Emergent Scientist 4, 1, available at <https://doi.org/10.1051/emsci/2019007> (2020) (Ex. 1005, “Abello”).

1–3, 12, 15	103	Wagner, ⁴ Yeany
4, 16, 17	103	Wagner, Yeany, Scorch ⁵

In support of these challenges, Petitioner submits the Declaration of Dr. Barry Kudrowitz. *See* Ex. 1002. Patent Owner relies on the Declaration of Dr. Jason Janét. *See* Ex. 2002.

E. Challenged Claims

Petitioner challenges claims 1–4, 12, and 15–17 of the ’774 patent, including independent claims 1, 12, and 16. Claim 1 is illustrative and recites:

1. A string shooting device comprising:
 - a body;
 - a housing attached to the body;
 - a pair of wheels, wherein at least one of the pair of wheels is a driven wheel; and
 - a string, wherein the string comprises a surface texture configured to increase air friction in response to the string being propelled through air by the pair of wheels, wherein the string defines an axis along which the string extends, and wherein the string comprises a plurality of fibers extending away from the axis.

Ex. 1001, 12:18–28. Claim 12 claims a method of propelling a looped string and includes many of the same limitations as claim 1, while claim 16 claims a string shooting device similar to claim 1, but also requires a “loading slot” defined by the housing. *See id.* at 13:1–16, 14:1–12.

⁴ US 6,537,126 B2, issued March 25, 2003 (Ex. 1008, “Wagner”).

⁵ Scorch Works, *String Shooter*, YouTube video dated July 4, 2018, available at <https://www.youtube.com/watch?v=IGIDy-lJxmo> (Ex. 1007, “Scorch”).

ANALYSIS OF CHALLENGED CLAIMS

A. Legal Standards

To prevail in its challenges, Petitioner must prove unpatentability by a preponderance of the evidence. 35 U.S.C. § 316(e) (2018); 37 C.F.R. § 42.1(d). “In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to Patent Owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burdens of proof in an *inter partes* review).

Petitioner relies on both anticipation and obviousness in its challenges. Pet. 6–7. To anticipate a claim under 35 U.S.C. § 102, “a single prior art reference must expressly or inherently disclose each claim limitation.” *Finisar Corp. v. DirecTV Grp., Inc.*, 523 F.3d 1323, 1334 (Fed. Cir. 2008). That “single reference must describe the claimed invention with sufficient precision and detail to establish that the subject matter existed in the prior art.” *Verve, LLC v. Crane Cams, Inc.*, 311 F.3d 1116, 1120 (Fed. Cir. 2002).

A claim is unpatentable as obvious under 35 U.S.C. § 103 if the differences between the claimed invention and the prior art are such that the subject matter, as a whole, would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. 35 U.S.C. § 103; *KSR Int’l Co.*

v. Teleflex Inc., 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations, including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of skill in the art; and (4) where in evidence, so-called secondary considerations, also known as objective indicia of nonobviousness.⁶ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

B. Level of Ordinary Skill in the Art

The level of ordinary skill in the art is “a prism or lens” through which we view the prior art and the claimed invention. *Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001). The person of ordinary skill in the art is a hypothetical person presumed to have known the relevant art at the time of the invention. *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995). In determining the level of ordinary skill in the art, we may consider certain factors, including: “(1) the educational level of the inventor; (2) type of problems encountered in the art; (3) prior art solutions to those problems; (4) rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field.” *Best Med. Int’l, Inc. v. Elekta Inc.*, 46 F.4th 1346, 1353 (Fed. Cir. 2022) (quoting *Daiichi Sankyo Co. v. Apotex, Inc.*, 501 F.3d 1254, 1256 (Fed. Cir. 2007)). “The patent’s purpose can also be informative.” *Id.*

Petitioner contends that a person having ordinary skill in the art at the time of the invention “was typically a person with a bachelor’s degree in mechanical engineering, aerospace engineering, physics, or other science or

⁶ Patent Owner does not rely on any objective indicia of nonobviousness in this proceeding.

engineering based degree that [was] familiar with general principles of mechanics and aerodynamics with at least two years of experience in product design and development in the field of toys or other amusement type devices.” Pet. 32 (citing Ex. 1002 ¶¶ 2–6, 22–26). Patent Owner states that it submitted the following proposal for a POSITA in the related district court litigation: “[a POSITA] would have had at least a B.S. degree in Mechanical Engineering, Electrical Engineering, Aerospace Engineering, Industrial Design, Product Design, or similar field, with at least two years industry experience in one of these fields, and such POSITA would have been familiar with general principles of mechanics, fluid mechanics and aerodynamics.” PO Resp. 4–5.

We note that the parties’ proposals overlap considerably, and neither party argues the inadequacy of the other party’s proposal or that any patentability issue in this case turns on the resolution of this issue. We find Petitioner’s definition consistent with the problems and solutions disclosed in the ’774 patent and prior art of record, and adopt it as our own. *See, e.g., GPAC*, 57 F.3d at 1579 (approving the determination of the level of ordinary skill in the art by appeal to the references of record). We would arrive at the same findings and conclusions in this Decision if we adopted Patent Owner’s proposal.

C. Claim Construction

Pursuant to 37 C.F.R. § 42.100(b), we apply the claim construction standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc). Under that standard, we give the words of a claim their plain and ordinary meaning as would have been understood by one skilled in the art at the time of the invention and in the context of the entire patent disclosure.

Id. at 1312–13. Only terms in controversy need be construed, and only to the extent necessary to resolve the controversy. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)).

Petitioner contends that no “term requires construction to resolve the invalidity grounds presented in this Petition since the prior art renders claims 1–4, 12, and 15–17 unpatentable under any reasonable interpretation of the claims.” Pet. 7. Patent Owner argues that it “does not believe express claim constructions are necessary during this proceeding because the claims can readily be given their ordinary and customary meaning in the context of the patent at the time it was filed.” PO Resp. 5.

Based on the parties’ positions and our view of the record, we need not expressly construe any claim limitations to resolve the issues in this Decision. To the extent that any implicit claim construction issues relate to the issues raised by the parties, we address them in the context of the parties’ patentability arguments below.

D. Obviousness Based on Wagner and Yeany

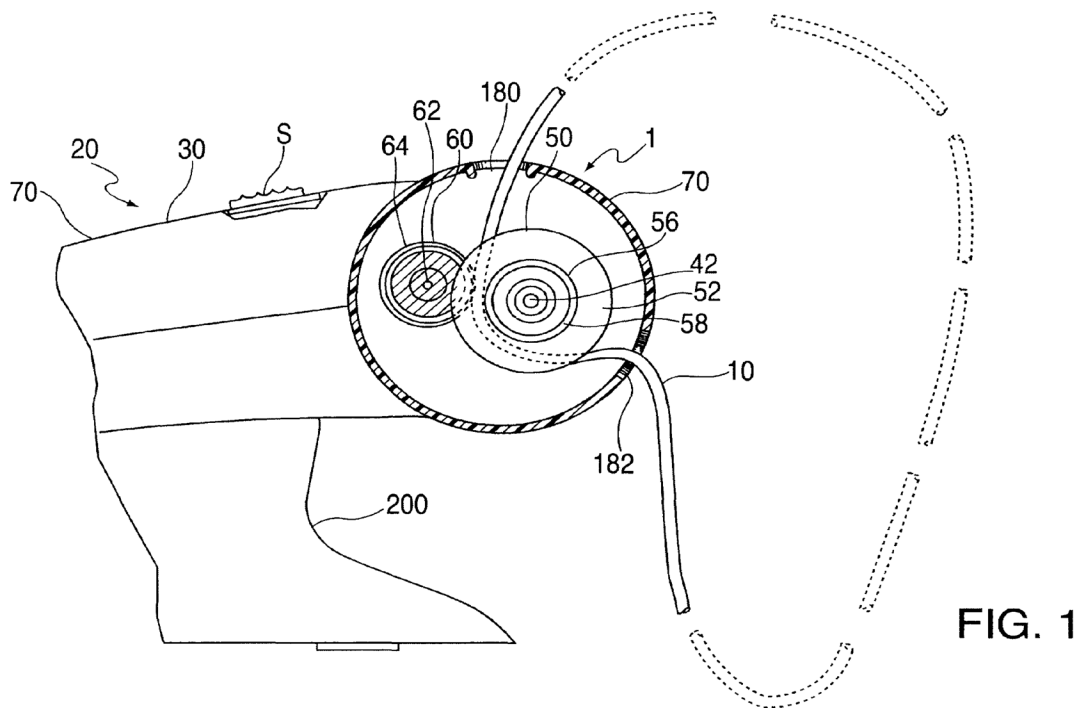
Petitioner argues that the combination of Wagner and Yeany renders claims 1–3, 12, and 15 obvious. Pet. 7, 71–82. Patent Owner raises specific arguments against the challenge to independent claim 1, and argues that the challenges to claims 2, 3, 12, and 15 fail for the same reasons. PO Resp. 14–

15.⁷ We first provide a brief overview of the references and then address the parties' arguments.

1. Overview Wagner

Wagner discloses an “amusement device having an endless flexible strand forming a loop and an inline traction drive unit that drives a portion of the strand to . . . create an elongated loop extending from the drive unit.” Ex. 1008, code (57). Wagner’s device “includes a housing with a handle and a rotatable cup with an ejection aperture for changing the direction of the driven loop.” *Id.*

We reproduce Wagner’s Figures 1 and 3 below.



⁷ Patent Owner also argues that the combination of Wagner and Yeany does not render claim 16 obvious, but Petitioner does not challenge claim 16 as part of this ground. *See* PO Resp. 15; Pet. 7.

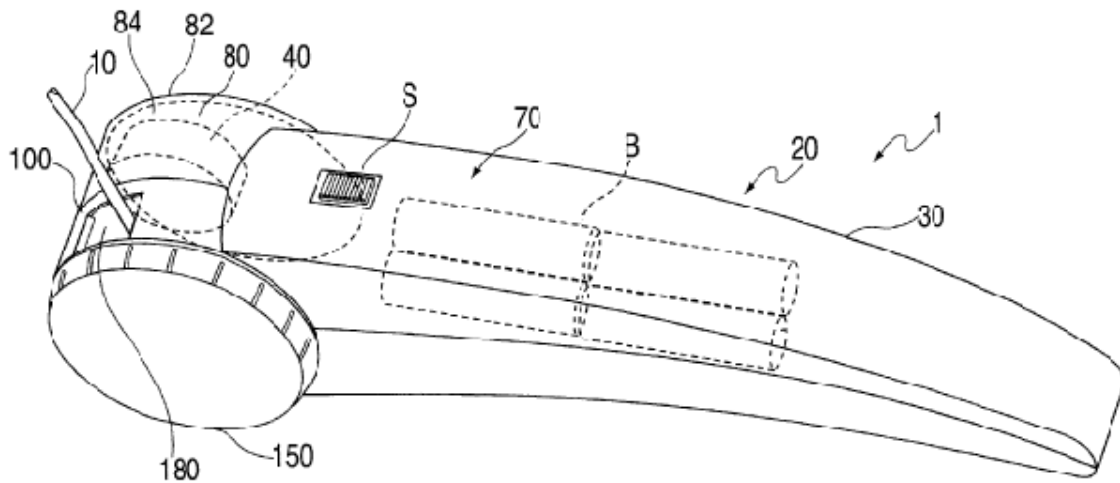


FIG. 3

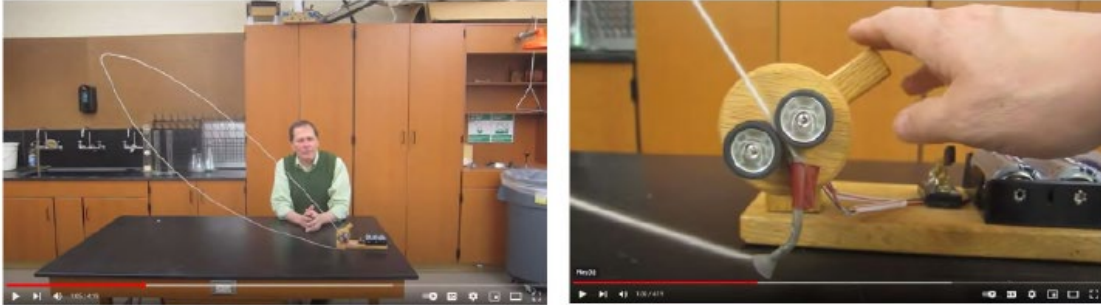
Figure 1 shows “a side elevation view, partially in section,” and Figure 3 shows “a top perspective view of said device.” Ex. 1008, 1:18–22. Both figures depict endless flexible loop 10 exiting the device at aperture 180 defined by rotatable cup 100 and cover 150. *See id.* at 4:22–26, Figs. 1, 3. Loop 10 enters cup 100 at aperture 182 shown in Figure 1. *Id.* at 4:27–31, Fig. 1. Drive motor 40, shown in Figure 3, drives drive wheel 50, shown in Figure 1. *Id.* at 3:37–42. Drive wheel 50 and circumferentially opposed wheel 60 (shown in Figure 1), and associated flanges, “form a channel for trapping and guiding loop 10.” *Id.* at 2:44–53. The closely-spaced wheels have surfaces that grip loop 10 and drive it inline along its length. *Id.* at 2:53–59. Wagner’s device includes handle 30, and a user may change the configuration of the driven loop 10 by changing the orientation handle 30. *Id.* at 4:44–46.

2. Overview of Yeany

Yeany is a YouTube video dated June 11, 2014 that shows a “String shooter-String launcher” device operated by Bruce Yeany. Ex. 1004

(video); Ex. 1014 (YouTube page showing title, date, description, and comments associated with the video). Mr. Yeany also narrates portions of the video and explains the operation of the device. Ex. 1004.

We reproduce several screenshots from Yeany below, with each screenshot appearing in the Petition. *See* Pet. 24–25, 33, 36; Ex. 1004.



Ex.1004, 1:05 and 1:30



Ex.1004, 1:16

The screenshot on the upper left bears a time stamp of 1:05⁸ and shows the string shooter device in operation. Ex. 1004, 1:05. The shooting device includes a looped string mounted to a wooden body on a table, with the distal end of the looped string shown several feet above the table. *Id.* The screenshot on the upper right bears a time stamp of 1:30 and shows an enlarged view of the body having a pair of wheels, with the looped string running between the wheels. *Id.* at 1:30. The screenshot shown at the bottom bears a time stamp of 1:16 and shows an enlarged view of the looped string, with threads extending from the string. *Id.* at 1:16.

3. Discussion

Petitioner argues that Wagner discloses all of the limitations of claims 1–3, 12, and 15 but “does not expressly state the string has fibers extending away from the axis,” as required by independent claims 1 and 12. Pet. 71 (citing Ex. 1002 ¶ 149).⁹ Petitioner contends that because Wagner’s device relies on lift, a “POSITA would have been motivated to look[] for ways to

⁸ We follow the time stamp nomenclature used by Petitioner, where the number to the left of the colon represents the elapsed minutes of the video, and the number to the right of the colon represents the elapsed seconds, such that a time stamp of “1:05” indicates a screenshot of the Yeany video taken at 1 minute and 5 seconds after the start of the video. *See* Pet. 24; Ex. 1004, 1:05.

⁹ Claim 1 requires “a string, wherein the string comprises a surface texture configured to increase air friction in response to the string being propelled through air by the pair of wheels, wherein the string defines an axis along which the string extends, and wherein the string comprises a plurality of fibers extending away from the axis,” while claim 12 recites “wherein the looped string defines an axis along which the string extends, and wherein the looped string comprises a plurality of fibers extending away from the axis.” Ex. 1001, 12:23–28, 13:5–8.

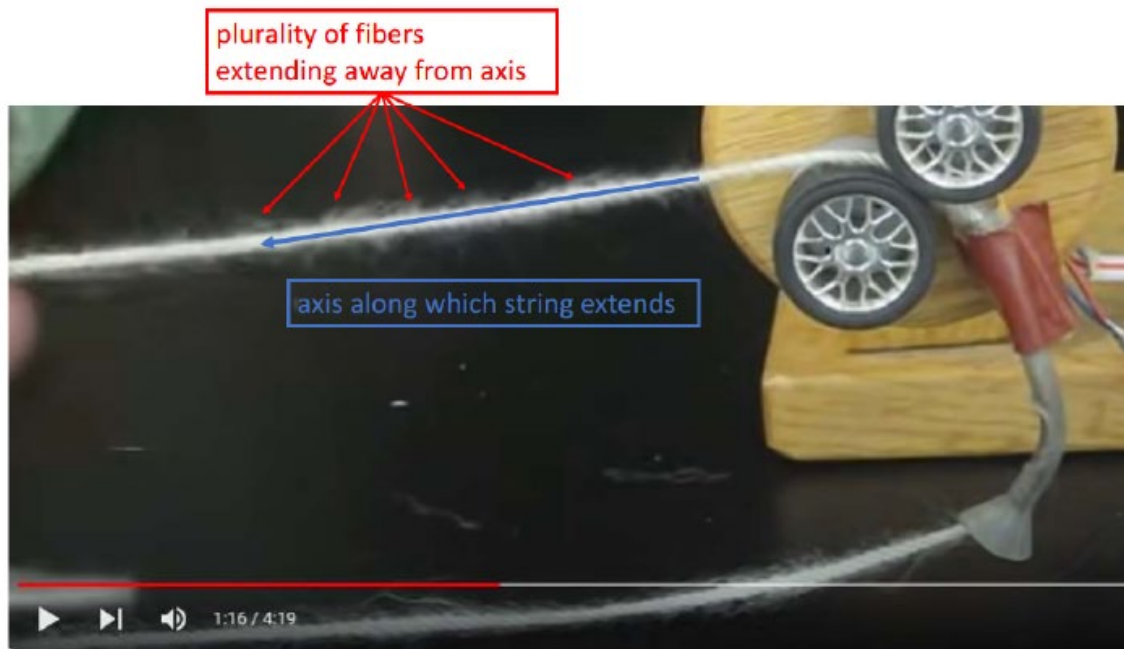
reduce the velocity required to lift the unsupported loop portions to form various configuration[s], which provides a number of benefits.” *Id.* (citing Ex. 1002 ¶ 149). Those alleged benefits of the lower speeds necessary to operate the device include (1) reducing the power required to drive the string; (2) reducing wear on the device; (3) reducing noise; and (4) allowing for the use of smaller motors. *Id.* Petitioner contends that a POSITA would have known that one way to decrease string velocity while creating lift “was to increase the friction between the surface of the string and the air.” *Id.* at 72 (citing Ex. 1002 ¶ 150). According to Petitioner, Yeany discloses a string with fibers extending away from its axis as required by the claims and that a POSITA would have been motivated to use such a string to achieve the benefits Petitioner provides. *Id.* at 76–78 (citing Ex. 1002 ¶¶ 155–160). Petitioner relies on its anticipation arguments based on Yeany when arguing that Yeany discloses the claimed string, with those arguments relying on Yeany’s video showing a string with an alleged “fuzzy surface texture that would increase air friction.” *Id.* at 78 (incorporating anticipation arguments) (citing Ex. 1003 ¶ 160), 36–38 (arguing that Yeany discloses the claimed string) (citing Ex. 1002 ¶¶ 83–87).

Patent Owner argues that combination of Wagner and Yeany lacks “disclosure regarding the surface texture of the string being configured to increase air friction in response to the string being propelled through air by the pair of wheels” because both references are silent on the issue. PO Resp. 14 (citing Ex. 2002 ¶ 159). According to Patent Owner, the “fact that a close-up of the string after it has been shooting through the two rotating wheels shows a fuzzy surface texture does not indicate that the fuzziness is configured to increase the air friction as claimed.” *Id.* at 11 (citing Ex. 2002

¶ 103). Patent Owner relies on the same arguments when addressing the similar limitation in independent claim 12 and does not raise separate arguments addressing dependent claims 2, 3, and 15. *Id.* at 11, 14–15.

We agree with Patent Owner to the extent that it argues that neither Wagner nor Yeany explicitly state that its string includes the claimed surface texture. *See* PO Resp. 14. The argument misses the point, however, because Petitioner does not rely on Wagner as disclosing the claimed surface texture and does not rely on any explicit statement within the Yeany video describing the surface texture. *See* Pet. 36–38. Instead, Petitioner asserts that “[a]lthough not discussed in the [Yeany video’s] narration, when the camera pans in on the string it is *shown* to have an axis of extension with fibers extending away from that axis creating a fuzzy surface texture that would increase air friction when propelled through the air.” *Id.* at 36 (emphasis added) (citing Ex. 1002 ¶ 83; Ex. 1004, 1:14–25). Petitioner persuasively analogizes the “fuzzy” string in Yeany with the description of the claimed string in the ’774 patent as “fuzzy,” resulting in a string having the claimed surface texture, with fibers extending away from the axis of the string. *Id.* at 36–37 (citing Ex. 1001, 4:13–17, 5:14–16, 5:21–29; Ex. 1002 ¶¶ 84–85; Ex. 1004, 0:50–1:02, 1:14–25).

We reproduce below an annotated screenshot Petitioner relies on for these limitations. *See id.* at 37.



The screenshot above shows a relatively straight portion of the string stretching from left to right. Pet. 37; Ex. 1004, 1:16. Petitioner’s annotations include red arrows pointing to the upper area of the string as showing a “plurality of fibers extending away from [the] axis,” and a blue arrow down the center of the string and identified as the “axis along which string extends.” Pet. 37.

Petitioner persuasively states, without any direct dispute from Patent Owner, that a “POSITA would understand that the fuzzy surface texture of Yeany’s string would increase the air friction relative to a string with a smoother surface texture because the fibers extending from the surface of the string would impede the movement of air near the string surface, thereby increasing the friction between the string and the air.” *Id.* at 38 (citing Ex. 1002 ¶ 86). We agree with Petitioner that such basic physics principles were known to a POSITA. We also agree with Petitioner’s conclusion, that “the string surface shown in Yeany is an express or implicit disclosure of a ‘a

surface texture configured to increase air friction in response to the string being propelled through air by the pair of wheels” and that even if not express or implicit, Yeany inherently discloses a string that increases air friction. *Id.* (citing Ex. 1002 ¶ 87). As shown in the video clips Petitioner relies on, Yeany discloses a “fuzzy” string with fibers extending away from an axis of the string, and such a surface texture would “increase air friction in response to the string being propelled through air by the pair of wheels” as required by the claims. *See id.* at 36–38 (arguing that Yeany discloses the claimed string) (citing Ex. 1002 ¶¶ 83–87), 78 (citing Ex. 1002 ¶¶ 159–160).

Patent Owner does not directly dispute the reasoning set forth in the Petition as to Yeany’s disclosure of a string meeting the claim limitations. *See* PO Resp. 10–11, 14–15. The only argument Patent Owner raises on this issue relies on the theory that while Yeany’s string shown in the video may meet the claim limitations “after it has been shooting through the two rotating wheels,” this “does not indicate that the fuzziness is configured to increase the air friction as claimed.” *Id.* at 11 (citing Ex. 2002 ¶ 103). We find this argument unpersuasive for two reasons. First, it fails to dispute Petitioner’s assertion that the string shown in Yeany actually discloses the claimed surface texture of the string. *See* Pet. Reply 7 (pointing out that Patent Owner acknowledges that Yeany discloses a “fuzzy” string and does not dispute Petitioner’s arguments). Second, the argument assumes that if the string shown in Yeany failed to meet the claim limitations at some earlier point in time, perhaps before the video was taken or early in the video, that the later portions of the video would somehow not count. *See* PO Resp. 11. This argument lacks any factual support because nothing in the record supports Patent Owner’s assumption that Yeany’s string ever lacked fibers

extending away from its axis in a manner that increased friction. The argument also lacks legal support for the notion that a reference may be deemed to not disclose a limitation if, at some unspecified prior point in time not shown in the reference, it may have failed to disclose the limitation.

Patent Owner also raises a new argument in its Sur-reply, contending that Petitioner employed an improper standard when asserting that Yeany's string was capable of increasing air friction, and that capability alone satisfies the claim language requiring a surface texture "configured to increase air friction in response to the string being propelled through air." *See* PO Sur-reply 5–7 (emphasis omitted). There are two problems with this argument. First, it comes too late in the Sur-reply, depriving Petitioner the chance to brief the issue, and therefore Patent Owner forfeited the argument. *See* Paper 7, 10 ("Patent Owner is cautioned that any arguments for patentability not raised in the response may be deemed waived."). Second, Petitioner never relies on a capability argument here. *See* Pet. 36–38, 78. Instead, Petitioner argues that Yeany's fuzzy string shown in the video necessarily would increase friction with the surround air, not merely that it may be capable of doing so based on an allegedly overbroad construction of "configured to" as Patent Owner alleges. *See id.* For the reasons discussed above and as set forth in the Petition, we agree with Petitioner.

Patent Owner does not dispute that the combination of Wagner and Yeany discloses the remaining limitations of claims 1–3, 12, and 15. *See* PO Resp. 14–15. For example, Petitioner asserts, without dispute, that Wagner discloses the claimed "body," "a housing attached to the body," and "a pair of wheels." *See* Pet. 73–76. Petitioner also provides the above-described motivations to add Yeany's fuzzy string, with its lower required lift off

speeds, to Wagner’s device. *See id.* at 76–78. Patent Owner does not dispute that if Yeany’s string meets the claim requirements that a POSITA would have been motivated to add it to Wagner’s device for the reasons provided by Petitioner. *See* PO Resp. 14–15.

We have reviewed the evidence and arguments of record and find that Petitioner has shown, by a preponderance of the evidence, that the combination of Wagner and Yeany discloses the remaining limitations of claims 1–3, 12, and 15 and that a POSITA would have been motivated to combine Wagner and Yeany, for the reasons set forth in the Petition, which we adopt as our own. *See* Pet. 73–82.¹⁰ Accordingly, we find that Petitioner has established, by a preponderance of the evidence, that claims 1–3, 12, and 15 would have been obvious based on the combination of Wagner and Yeany.

E. Obviousness Based on Wagner, Yeany, and Scorch

Petitioner argues that the combination of Wagner, Yeany, and Scorch renders claims 4, 16, and 17 obvious. Pet. 7, 83–91. Claim 4 depends from claim 1, and further recites “wherein the housing covers, at least partially, the pair of wheels, and wherein the housing defines a loading slot through which the string is loaded or removed from between the pair of wheels.”

¹⁰ Aside from adopting Petitioner’s arguments and evidence as our own, we do not set forth separate formal findings as to Petitioner’s undisputed assertions. *See In re NuVasive, Inc.*, 841 F.3d 966, 974 (Fed. Cir. 2016) (“Although the Board did not make findings as to whether any of the other claim limitations . . . are disclosed in the prior art, it did not have to: NuVasive did not present arguments about those limitations to the Board. . . . The Board . . . was not required to address undisputed matters.”); Paper 7, 10 (“Patent Owner is cautioned that any arguments not raised in the response may be deemed waived.” (emphasis omitted)).

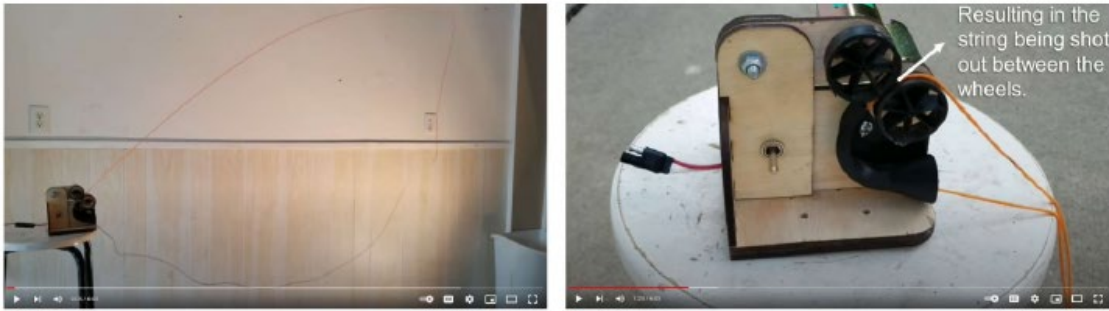
Ex. 1001, 12:38–41. Independent claim 16 also recites “a housing attached to the body and defining a loading slot” and “a pair of wheels . . . wherein the loading slot is disposed at least partially over at least one of the pair of wheels.” *Id.* at 14:3–6. Claim 17 depends from claim 16 and includes the “loading slot” limitation by virtue of its dependence on claim 16, but otherwise claims unrelated aspects of the string surface texture. *See id.* at 14:13–18.

Petitioner argues that Scorch discloses the claimed loading slot and that a POSITA would have been motivated to combine Wagner, Yeany, and Scorch and incorporate Scorch’s slot in Wagner’s housing. *See* Pet. 83–90. Patent Owner’s arguments focus on the “loading slot” required by these claims, and argues that a POSITA would not have been motivated to combine the references as Petitioner proposes. PO Resp. 15–22. We first provide a brief overview of Scorch and then address the parties’ arguments.

1. Overview of Scorch

Scorch is a YouTube video dated July 4, 2018 that shows a “String Shooter” device posted by Scorch Works. Ex. 1007 (video); Ex. 1015 (YouTube page showing title, date, and description of video with related links).

We reproduce excerpts from the Scorch video included in the Petition below. *See* Pet. 31.



Ex.1007, 0:05 and 1:20



Ex.1007, 3:16

The video screenshot on the top left shows a view of the Scorch device in operation, with an orange string propelled from the device in a closed, arcuate shape. *See* Ex. 1007, 0:05. The screenshot on the upper right shows a closer view of the device and the string inserted between two wheels, with a funnel-like structure below and to the left of the wheels and the string positioned within the funnel and exiting to the space between the wheels. *See id.* at 1:20. The screenshot on the bottom shows an enlarged view of the

funnel detached from the device, with a slot in the side of the funnel. *See id.* at 3:16.

2. Discussion

Petitioner argues that the combination of Wagner and Yeany disclose the limitations of claim 1 as discussed above, and that Wagner also discloses a housing that at least partially covers the pair of wheels as required by claim 4. Pet. 83–84 (citing Ex. 1002 ¶ 171). Petitioner contends, with reliance on narration in Scorch’s video, that Scorch’s funnel includes “a slot in the side” so that user can insert a loop of string in the slot and around the wheels, enabling to user to “swap them [the strings] out really quick.” *Id.* at 84–85 (citing Ex. 1002 ¶¶ 172–173; Ex. 1007, 1:13–47, 3:00–53, 6:03). According to Petitioner, a “POSITA would apply the teaching of a side loading slot from Scorch to the Wagner device to improve the convenience of replacing a loop of string.” *Id.* at 85 (citing Ex. 1002 ¶ 174). Petitioner points to Wagner’s allegedly “inconvenient process that requires a user overcoming the ‘friction fit’ to remove the cover and then lining up complementary structures on the cover and the cup to reattach the cover.” *Id.* at 85–86 (citing Ex. 1002 ¶ 174; Ex. 1008, 3:46–4:45); *see also* Pet. Reply 18–21 (pointing to alleged benefits of its proposed combination).

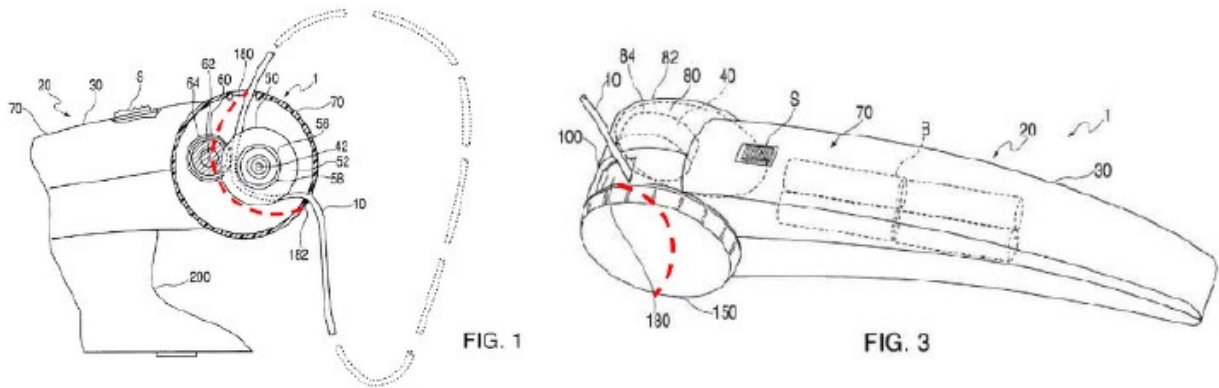
Patent Owner argues that a POSITA would not have been motivated to combine the references for a number of reasons. *See* PO Resp. 15–22; PO Sur-reply 14–21. Patent Owner, citing Dr. Janét’s testimony, asserts that one of ordinary skill in the art would understand that the housing for a string shooter should (1) “be stable and structurally sound in such a way that it simultaneously protects the device’s moving components and does not inadvertently expose the moving components to pose a safety risk to users or

bystanders;” (2) “should be user-friendly, enabling string loop installation and removal without the need for special tools, motions or complex assembly/disassembly steps;” and (3) “should allow visual and tactile feedback for users during operation, troubleshooting, string loop exchanges, etc.” *Id.* at 16–17 (citing Ex. 1001, 9:17–11:47; Ex. 2002 ¶ 120). According to Patent Owner, the “proposed combination of Wagner in view of Yeany and Scorch results in a housing design that is impractical, unsuitable for a kinetic device, unsafe and unnecessarily complicated to use, including string loop installation and removal,” and “actually results in a worse design than if Wagner was left as-is.” *Id.* at 17 (citing Ex. 2002 ¶ 121), 19–22 (arguing that Petitioner’s combination introduces more difficulties than Wagner alone when attempting to install the string) (citing Ex. 2002 ¶¶ 187–188, 191, 201); *see also* PO Sur-reply 15–20.

Patent Owner also contends that Scorch notes the potential for the string to come out the side of the funnel without adding a bent wire to keep it restrained, and that none of the references teach a housing with “a loading slot through which the string is loaded or removed from between the pair of wheels.” PO Resp. 18–19 (citing Ex. 2002 ¶ 184). Patent Owner argues that such complications teach away from use of the slot. *Id.* at 22 (citing Ex. 2002 ¶¶ 204–205). Patent Owner also asserts that if a motivation exists, it would be to use Scorch’s funnel with Wagner’s housing in a manner “like Scorch’s current design,” which would fail to include the claimed slot in the housing as required by the claims. *Id.* at 21.

We first address the nature of Petitioner’s proposed combination. Petitioner proposes adding the loading slot alone from Scorch into Wagner’s housing, using Yeany’s “fuzzy” string. *See* Pet. 85–86 (citing Ex. 1002

¶¶ 173–175). We reproduce an annotated drawing of Petitioner’s proposed combination form the Petition below.



The annotated drawings show Wagner’s Figure 1 (on the left) and Figure 3 (on the right), with Petitioner’s proposed addition of a loading slot in dashed, arcuate red lines. *See* Pet. 86. The dashed red line on Figure 1 shows the proposed slot generally over and between the wheels of Wagner’s device, while the dashed red line on Figure 3 shows the proposed slot from the exterior of the device on cover 150. *See id.*

We agree with Petitioner that its proposed combination discloses all of the limitations of claims 4, 16, and 17, and Patent Owner does not argue that Petitioner’s proposed combination fails to disclose any limitations. *See* Pet. 83–91; PO Resp. 15–22. For example, Wagner’s housing at least partially covers the wheels as required by claim 4, and the housing defines a loading slot that allows for loading and removing the string from between the wheels. Pet. 83–86. The combination also shows the loading slot “disposed at least partially over at least one of the pair of wheels” as required by claim 16, in a manner similar to that shown in the ’774 patent. *Id.* at 88–90.

Patent Owner’s only potential argument addressing whether the combination discloses the limitations of claim 4, 16, and 17 does not properly address Petitioner’s proposed combination. For example, Patent

Owner argues that if there were a motivation to combine, it would make more sense to retain Scorch's funnel adjacent to Wagner's housing, which would mean that the housing would not define the loading slot as required by claims 4 and 16. *See* PO Resp. 21. But Petitioner does not propose incorporating Scorch's entire funnel into Wagner's housing, and was not required to bodily incorporate elements from one reference into another. *See Allied Erecting & Dismantling Co. v. Genesis Attachments, LLC*, 825 F.3d 1373, 1381 (Fed. Cir. 2016) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference."); *In re Mouttet*, 686 F.3d 1322, 1332 (Fed. Cir. 2012).

Patent Owner also argues that Scorch lacks the claimed "housing" and other limitations, but Petitioner relies on Wagner to meet the housing limitation, and Petitioner's motivation to combine argument does not hinge on whether Scorch's funnel also discloses a housing. *See* PO Resp. 18; PO Sur-reply 16–17. Similarly, Patent Owner's argument that Scorch alone does not disclose the claimed loading slot in the claimed position, or that none of the references standing alone disclose the claimed housing with a loading slot, does not address Petitioner's proposed combination and improperly attacks the references individually. *See* PO Resp. 17–19; *see also In re Keller*, 642 F.2d 413, 426 (CCPA 1981) ("[O]ne cannot show non-obviousness by attacking references individually.").

We also find that Petitioner established an adequate motivation to add Scorch's slot to Wagner's housing. *See* Pet. 85–87. Petitioner notes that adding or removing a string from Wagner's device requires manually removing a cover from a cup and aligning them to create apertures for the

string, and that adding Scorch’s slot removes this arguably inconvenient process by allowing insertion and removal of a string without removing and reinstalling any aspects of the housing. *See* Pet 85–86 (citing Ex. 1002 ¶¶ 174–175; Ex. 1007, 3:30–3:53, 6:03; Ex. 1008, 3:46–4:45); Pet. Reply 18–20 (citing in part Ex. 2002 ¶ 187 (Dr. Janét’s testimony that Wagner’s removal and reinstallation of a cover “may be viewed as an inconvenient process”)). Making insertion and removal of the string easier and quicker provides a notable advantage over Wagner’s existing device. *See id.* Scorch itself supports this argument and the related expert testimony because it discusses insertion and removal of strings and stated that the slot allows a user to “swap them out really quick.” Ex. 1007, 3:30–53. Petitioner also persuasively argues that a POSITA would know how to add the slot while maintaining the proper operation of the device, such as allowing insertion and removal of the string and avoiding inadvertent exiting of the string from the device. *See* Pet. 86–87 (citing Ex. 1002 ¶¶ 175–176; Ex. 1007, 4:00–30, Ex. 1008, 2:49–52); Pet. Reply 19, 21 (citing Ex. 1002 ¶¶ 174–176). We find Petitioner’s arguments and reasoning in support of adding Scorch’s slot to Wagner’s housing straightforward and persuasive.

Patent Owner’s arguments against the combination do not directly refute Petitioner’s reasoning or cast doubt on Scorch’s statement that its slot enables “quick” insertion and removal of a string—quicker than Wagner’s method that requires removal and replacement of a cover on its housing. *See* PO Resp. 16–22; PO Sur-reply 14–20; Ex. 2002 ¶ 187 (acknowledging inconvenience of Wagner’s existing process for insertion and removal of a string). Patent Owner suggests that Petitioner’s proposed combination fails to take into consideration certain drawbacks such as the risk of inadvertent

string exit from the housing or slot, but Petitioner expressly addresses such concerns in the Petition. *See* PO Resp. 18 (stating that Scorch’s slotted funnel may allow the string to “shoot out the slot” and that Scorch addresses this by adding “a bent wire” to “prevent the string from coming out the side”); PO Sur-reply 16–17; Pet. 86–87 (arguing that Wagner’s flanges would help to trap the string in place, but if not, Scorch’s additional structures could be used to restring the string and “to further reduce the risk of a string inadvertently exiting” the device). We agree with Petitioner that a POSITA would understand how to incorporate Scorch’s slot without causing inadvertent removal of the string—using structures already present in Wagner and Scorch—and the need to add such unclaimed structures does not teach away from the combination as Patent Owner suggests. *See* Pet. 86–87; PO Resp. 22. We also agree with Petitioner that a POSITA would understand how to make minor modifications, if necessary, to allow insertion and removal of the string around Wagner’s flanges. *See* Pet. Reply 21 (citing Ex. 1002 ¶¶ 174–176).

At best, Patent Owner’s arguments on this issue establish potential drawbacks in Petitioner’s proposed combination, but drawbacks alone do not defeat Petitioner’s obviousness rationale that includes readily apparent benefits. *See Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n.8 (Fed. Cir. 2000) (“The fact that the motivating benefit comes at the expense of another benefit . . . should not nullify its use as a basis to modify the disclosure of one reference with the teachings of another.”); *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (“a given course of action often has simultaneous advantages and disadvantages, and this does not necessarily obviate motivation to combine “). In addition, even if Patent

Owner were correct that Wagner’s existing design works as well as Petitioner’s proposed combination, given all of the tradeoffs involved, that would not fatally undermine Petitioner’s showing. *In re Fulton*, 391 F.3d 1195, 1200 (Fed. Cir. 2004) (obviousness does not require that the proposed combination “is the preferred, or most desirable, combination”). On this record, Petitioner’s (and Scorch’s) stated advantages that are achieved when adding Scorch’s slot to Wagner’s housing adequately support Petitioner’s motivation to combine rationale.

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that the combination of Wagner, Yeany, and Scorch discloses all of the limitations of claims 4, 16, and 17 and that a POSITA would have been motivated to combine the references in the manner Petitioner proposes. Accordingly, we determine that Petitioner proves by a preponderance of the evidence that the combination of Wagner, Yeany, and Scorch renders claims 4, 16, and 17 obvious.

F. Anticipation by Yeany

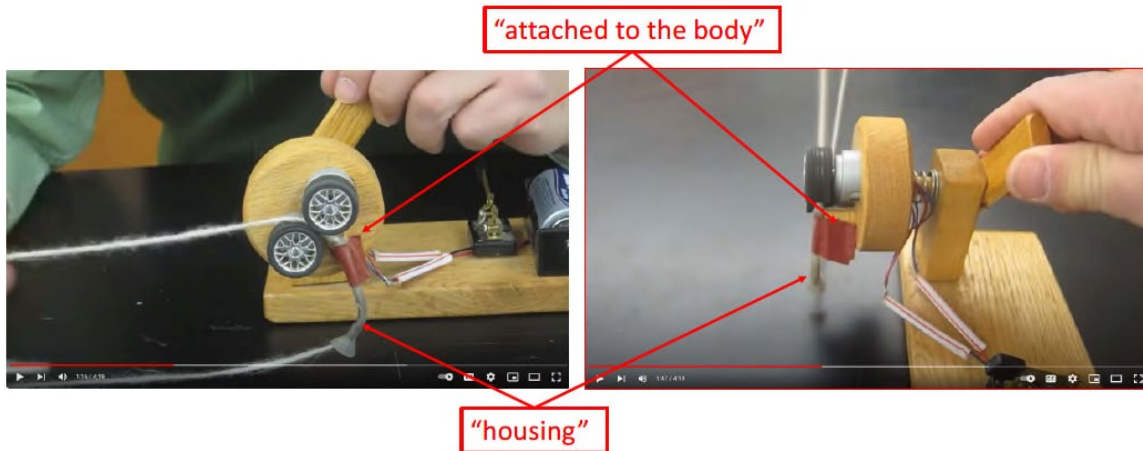
Petitioner argues that Yeany anticipates claims 1–3, 12, and 15. Pet. 6, 32–53. Patent Owner argues that Yeany fails to disclose certain limitations of claim 1, and that the same reasoning applies to claims 2, 3, 12, and 15. PO Resp. 10–12. We already addressed Petitioner’s arguments that these same claims are unpatentable as obvious based on Wagner and Yeany and found those arguments persuasive. We provide our analysis of this separate challenge to the claims for completeness.

We focus on the parties’ arguments as to claim 1 because they are determinative. Petitioner asserts that Yeany discloses every limitation of claim 1, and points to specific portions of Yeany to support its assertions.

Pet. 32–39. For the preamble, “[a] string shooting device,” Petitioner contends that Yeany discloses such a device in the Yeany video, with Mr. Yeany referring to the device as “a string shooter.” Pet. 32–33 (citing Ex. 1002 ¶ 78; Ex. 1004, 0:50–1:02, 1:17–22). Claim 1 also recites “a pair of wheels, wherein at least one of the pair of wheels is a driven wheel,” and Petitioner contends that Yeany meets these limitations because its device includes two wheels, with each wheel driven by a motor. Pet. 35 (citing Ex. 1002 ¶¶ 81–82; Ex. 1004, 1:16–1:22, 1:30, 1:38–48). Patent Owner does not dispute that Yeany discloses these aspects of claim 1. *See* PO Resp. 10–11. We find that Petitioner establishes that Yeany discloses these aspects of claim 1.

Petitioner argues that Yeany also discloses the “string” limitation and the details as to the claimed “surface texture” of the string, which Patent Owner disputes. *See* Pet. 35–39; PO Resp. 10–11; Pet. Reply 7–11; PO Sur-reply 5–7. These are the same arguments addressed above in the context of the obviousness challenge based on Wagner and Yeany, where Petitioner relies on Yeany for the same limitations of claim 1. For the same reasons discussed above, we find Petitioner’s arguments and evidence persuasive.

For the “body” and “a housing attached to the body” limitations, Petitioner argues that Yeany discloses a body made of wooden pieces and a housing made of gray plastic tubing attached to the body with red tape, with the gray plastic tubing housing the string. Pet. 33–34 (citing Ex. 1002 ¶¶ 79–80; Ex. 1004, 1:13–1:47). We reproduce annotated screenshots Petitioner relies on for these limitations. *See* Pet. 34.



The screenshot on the left shows wheels attached to wooden pieces, with the looped string passing through a gray tubular structure located below the wheels. Pet. 34; Ex. 1004, 1:13–47. Petitioner’s annotations include arrows pointing to the red tape attaching the gray tubular structure to the wooden piece as “attached to the body” and arrows pointing to the gray tubular structure as the “housing.” Pet. 34.

Patent Owner, in a very brief argument in the Response, contends that Yeany fails to disclose the claimed “body”:

As described above, Yeany is a table-top string shooting device. A POSITA would understand upon reading the ‘774 Patent that the body of the claimed device is configured to be held by a user [‘774 Patent Col. 6, lines 14-17] and that Yeany is not so configured. Exhibit 2002, ¶98.

PO Resp. 10 (bracketed citation in original); *see also* PO Sur-reply 5 (repeating argument verbatim but omitting bracketed citation). Patent Owner also argues, in a single sentence, that “Yeany also does not disclose a housing as disclosed in the ‘774 patent that is configured to receive wheels for propelling the looped string. [‘774 Patent Col. 9, lines 37-38].” PO Resp. 10 (bracketed citation in original); PO Sur-reply 7 (“The Yeany device is a tabletop device with the wheels exposed and does not include a housing.

In addition, there is no disclosure or suggestion of a housing since Yeany describes using the device to propel other objects other than string, which requires access to the wheels to place the objects between the wheels.”).

We find Petitioner’s arguments as to the claimed “body” and “housing” persuasive because Yeany’s wooden pieces that support other portions of its device form a “body” of the device, and the gray tubular structure encloses, and therefore houses, the string. The claims do not limit the form or function of the claimed “body” or “housing” in a manner that would fail to cover these structures in Yeany. *See* Pet. 33–34 (citing Ex. 1002 ¶¶ 79–80; Ex. 1004, 1:13–1:47).

Contrary to Patent Owner’s very limited arguments, the claims do not limit the claimed “body” to a hand-held body,¹¹ or the claimed “housing” to a housing configured to receive wheels. *See* Ex. 1001, 12:19–20. The fact that the specification describes structures with these features, does not, standing alone, support reading those limitations into the claim. *See Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014) (“While we read claims in view of the specification, of which they are a part, we do not read limitations from the embodiments in the specification into the claims.”). In addition, other claims, such as claims 4 and 10, require a housing that at least partially covers the wheels, which undermines Patent Owner’s argument because these other claims show that the applicant knew how to claim a housing configured to house wheels when desired, which counsels against reading that same limitation into claims that lack such

¹¹ Even if claim 1 required a hand-held device, Yeany discloses that its device may be held in the hand. *See* Pet. Reply 3–4 (citing Ex. 1004, 2:50–3:28).

language. *See Hologic, Inc. v. Minerva Surgical, Inc.*, 44 F.4th 1358, 1368 (Fed. Cir. 2022) (refusing to limit claim to limitation found in other claims because “inventors knew how to draft claims that require” limitation in question) (citing *Phillips*, 415 F.3d at 1314–15 (“Differences among claims can also be a useful guide in understanding the meaning of particular claim terms.”)).¹²

Based on the foregoing, we find the Petitioner proves by a preponderance of evidence that Yeany anticipates claim 1. Patent Owner does not dispute that Yeany discloses the remaining limitations of claims 2, 3, 12, and 15 if Yeany discloses all of the limitations of claim 1. *See* PO Resp. 10–12. We find Petitioner’s arguments and evidence as to these undisputed limitations persuasive, and we adopt it as our own. *See* Pet. 39–53. Accordingly, we also find the Petitioner proves by a preponderance of evidence that Yeany anticipates claims 2, 3, 12, and 15.

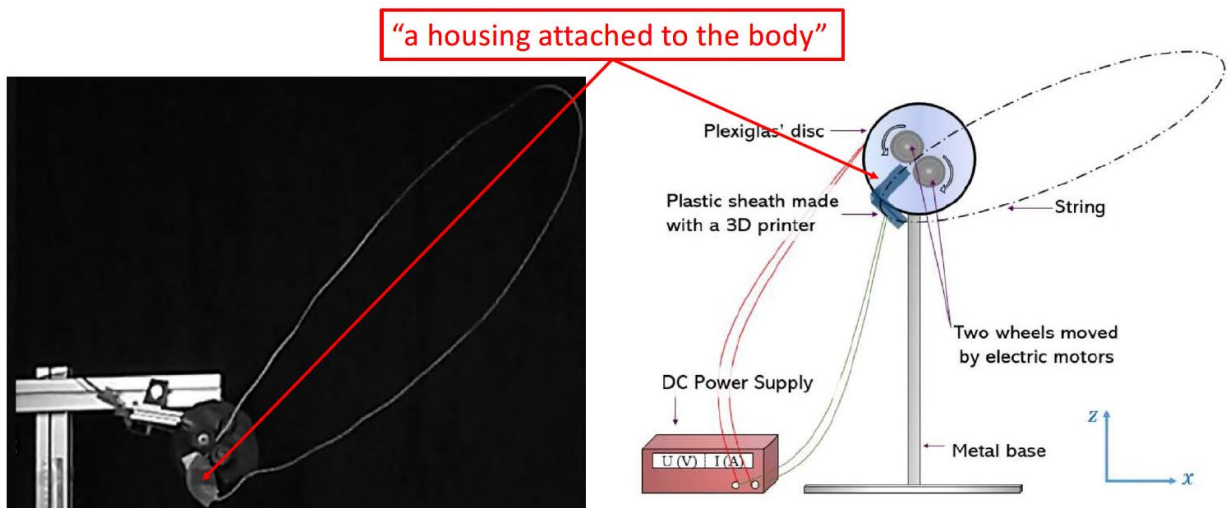
¹² At the oral hearing, Patent Owner asserted for the first time that Petitioner took positions in the district court litigation that supports Patent Owner’s reading of the “housing” limitation here. Tr. 30:1–12, 31:7–14. Although we authorized the parties to file exhibits after the oral hearing to address these assertions, we need not address the issue further because (1) Patent Owner maintains its position that we need not construe “housing” at all; (2) Patent Owner does not seek any specific relief based on Petitioner’s district court filings; (3) Patent Owner forfeited any argument on these issues by failing to include it in any briefing; and (4) devoting additional Board and party resources to these issues makes little sense given that we already determined that Petitioner established the unpatentability of all challenged claims in a manner that does not turn on the meaning of “housing.” *See id.*; Paper 25, 1; Exs. 1023–1027; Paper 7, 10.

G. Obviousness Based on Abello and Yeany

Petitioner argues that the combination of Wagner and Yeany renders claims 1–3, 12, and 15–17 obvious. Pet. 6, 53–71. Patent Owner raises specific arguments against the challenge to independent claims 1 and 12, and argues that the challenges to claims 2, 3 and 15 fail for the same reasons. PO Resp. 12–13. Patent Owner also argues that neither Abello nor Yeany teach the “loading slot” of claim 16. *Id.* at 13. We already found that Petitioner established the obviousness of these same claims based on Wagner and Yeany, and we provide our analysis of this separate challenge to the claims for completeness.

For this challenge, Petitioner relies on Abello for all of the limitations of the challenged claims with the exception of the string having fibers extending away from the string axis, and Petitioner relies on Yeany for that limitation. *See* Pet. 53–54. Abello is a research article describing a “String Shooter’s overall shape in ambient air.” Ex. 1005, 1. Abello’s “setup takes inspiration from YouTube videos,” including Yeany and Scorch. *Id.* at n.1, 4.

We reproduce Petitioner’s annotated version of Abello’s figures below.



On the left, we reproduce an image of Abello’s device in operation, with a string propelled through the air by the device. Pet. 56. On the right, we reproduce a version of Abello’s Figure 2 that includes Abello’s labels to a “base,” “string,” “[t]wo wheels moved by electric motors,” and a “[p]lastic sheath.” *Id.* Petitioner annotated these figures by adding a label with the claim limitation “a housing attached to the body” and arrows pointing to the plastic sheath. *Id.*

For claim 1, Petitioner argues that Abello’s base satisfies the “body” limitation of claim 1, the plastic sheath satisfies the “housing” limitation, and the two wheels satisfy the “pair of wheels” limitation. *Id.* at 55–58 (citing Ex. 1002 ¶¶ 116–120). Petitioner notes that Abello also discloses a string, and argues that a POSITA would have been motivated to use Yeany’s “fuzzy” string to increase lift and decrease the takeoff speed necessary to lift the string in the air. *Id.* at 58–61 (citing Ex. 1002 ¶¶ 121–126). Petitioner relies on Abello’s statement that smoother strings require higher takeoff speeds, and argues that “a POSITA would be motivated to use a string with a non-smooth surface” to reduce takeoff speed. *Id.* at 59–60 (citing Ex. 1002 ¶ 124; Ex. 1005, 4–5, 7). For the “loading slot” in claim 16, Petitioner points to the slot on Abello’s plastic sheath and argues that the slot at least partially over Abello’s lower wheel as required by claim 16, when viewed from the side. *Id.* at 69–70 (citing Ex. 1002 ¶¶ 143–146).

Patent Owner raises several arguments against this challenge that were already addressed and found unpersuasive in the context of our previous analysis. For example, Patent Owner argues that Abello “does not include a body configured to be held by a user” or a housing “that is configured to receive wheels,” but, as discussed above, claim 1 does not

require a hand-held device or a housing that receives wheels. *See* PO Resp. 12. Patent Owner also argues that Yeany’s string does not meet the claimed “surface texture” requirements, but we found the same argument unpersuasive for the reasons discussed above. *Id.* at 12–13.

Patent Owner also argues that “Abello teaches away from a fuzzy string because it indicates a preference for smooth strings and discloses that intentionally modifying the string would yield unknown results.” PO Resp. 12. Patent Owner bases this argument on Abello’s statement that “we noticed that the most dense strings as well as the smoothest strings were the ones to have the highest takeoff speeds.” *Id.* (quoting Ex. 1005, 4–5) (citing Ex. 2002 ¶¶ 130, 132). We find this argument unpersuasive because it misapprehends Abello’s statements about smooth strings and takeoff speeds. Abello does correlate smoother strings with higher takeoff speeds, and the parties appear to agree on this point, but Abello does not suggest a preference for higher takeoff speeds or smoother strings. *See* Ex. 1005, 4–5. We agree with Petitioner that this statement from Abello suggests the opposite reading, i.e., that Abello shows a preference for non-smooth strings such as Yeany’s fuzzy string because such strings will lead to lower take-off speeds, which requires less energy and reduces wear. *See* Pet. 59–60 (citing Ex. 1002 ¶ 124; Ex. 1005, 4–5, 7); Pet. Reply 14 (citing Ex. 1002 ¶¶ 66, 112–113; Ex. 1005, 4–5, 7). Patent Owner’s contrary interpretation seems to equate “highest” in the phrase “highest takeoff speeds” as positive, but such an interpretation lacks credibility and finds no support in the record. *See* PO Resp. 12; PO Sur-reply 8–9. Patent Owner’s cited expert testimony also fails to support this reading, and merely states that “[e]ven if a faster motor speed is needed to shoot a smooth [string], a POSITA would know that

Yeany's strings could have been smooth, even if just at the beginning of their use.” Ex. 2002 ¶ 130. This statement, even if true, does not undermine Petitioner's showing that a POSITA would have been motivated to use a non-smooth string in Abello, and that Yeany discloses such a string.

Patent Owner does not dispute that the combination of Abello and Yeany discloses the remaining limitations of claims 1–3, 12, and 15–17. *See* PO Resp. 12–13.¹³ We find Petitioner's arguments and evidence as to these undisputed limitations persuasive, and adopt it as our own. *See* Pet. 53–71.

Based on the foregoing, we find that Petitioner proves by a preponderance of the evidence that the combination of Abello and Yeany discloses all of the limitations of claims 1–3, 12, and 15–17 and that a POSITA would have been motivated to combine the references in the manner Petitioner proposes. Accordingly, we determine that Petitioner proves by a preponderance of the evidence that Abello and Yeany render claims 1–3, 12, and 15–17 obvious.

¹³ Patent Owner alludes to new arguments as to claims 15–17 in its Sur-reply. *See* PO Sur-reply 11–12 (alluding to claim 15's “intake aperture” limitation, claim 16's “loading slot” limitation, and claim 17's “turbulent air boundary layer” limitation). Patent Owner forfeited such arguments by not even alluding to them in its Response. *See* Paper 7, 10. Even if we considered the new arguments, they comprise conclusory, single-sentence statements that do not address Petitioner's arguments or cite to any evidence and therefore lack adequate sufficient development to counter Petitioner's showing, which we find persuasive. *See* PO Sur-reply 11–12; *Fresenius USA, Inc. v. Baxter Int'l, Inc.*, 582 F.3d 1288, 1296 (Fed. Cir. 2009) (“If a party fails to raise an argument before the trial court, or presents only a skeletal or undeveloped argument to the trial court, we may deem that argument waived on appeal.”); *Ajinomoto Co. v. Int'l Trade Comm'n*, 597 F.3d 1267, 1278 (Fed. Cir. 2010) (holding that a single-sentence argument in a brief was insufficient to avoid waiver).

ANALYSIS OF PATENT OWNER’S MOTION TO AMEND

As discussed above, Patent Owner filed a contingent Motion to Amend, seeking amendments to the original, challenged claims in the form of substitute claims 21–28, if we found the challenged claims unpatentable. MTA 1–2. Because we conclude that Petitioner shows, by a preponderance of the evidence, that challenged claims 1–4, 12, and 15–17 are unpatentable, we consider Patent Owner’s Motion to Amend with respect to the substitute claims. Petitioner filed an Opposition to the Motion, but did not oppose the Motion as to proposed substitute claim 27. *See* Opp. 1 n.2.

“Before considering the patentability of any substitute claims, . . . the Board first must determine whether the motion to amend meets the statutory and regulatory requirements set forth in 35 U.S.C. § 316(d) and 37 C.F.R. § 42.121.” *See Lectrosonics, Inc. v. Zaxcom, Inc.*, IPR2018-01129, Paper 15 at 4 (PTAB Feb. 25, 2019) (precedential). Patent Owner bears the burden of persuasion to show, by a preponderance of the evidence, that the motion to amend complies with these requirements. 37 C.F.R. § 42.121(d)(1). Specifically, a patent owner must provide a claim listing reproducing each proposed substitute claim, and must make an initial showing to demonstrate the following: (1) the amendment proposes a reasonable number of substitute claims; (2) the amendment responds to a ground of unpatentability involved in the trial; and (3) support for each proposed substitute claim. *See* 35 U.S.C. § 316(d); 37 C.F.R. § 42.121.

As also provided under our Rules, a petitioner bears the burden of persuasion to show, by a preponderance of the evidence, that any proposed substitute claim is unpatentable. 37 C.F.R. § 42.121(d)(2).

A. Proposed Substitute Claims

Patent Owner proposes to amend the '774 patent by adding new claims 21–28 as respective substitutes for original 1–4, 12, and 15–17. MTA 2, 5. Patent Owner submits proposed claim 21 as a substitute for original claim 1, and we reproduce proposed substitute claim 21 below.¹⁴

21. A string shooting device comprising:
a body;
a housing attached to the body;
a pair of wheels, wherein at least one of the pair of wheels is a driven wheel; ~~and~~
a string, wherein the string comprises a surface texture configured to increase air friction in response to the string being propelled through air by the pair of wheels, wherein the string defines an axis along which the string extends, and wherein the string comprises a plurality of fibers extending away from the axis; and
wherein the housing covers, at least partially, the pair of wheels, and wherein the housing defines a loading slot therein through which the string is loaded from between the pair of wheels.

MTA Claims App. i.

Patent Owner submits proposed claims 22 and 23 as substitute for original claims 2 and 3 and include amendments to respectively depend claim 22 from claim 21 and depend claim 23 from claim 22. MTA Claims App. ii.

Patent Owner submits proposed claim 24 as a substitute for original claim 4, and we reproduce proposed substitute claim 24 below:

The string shooting device of claim [2]1, wherein the body is configured to be hand held and ~~the housing covers, at least~~

¹⁴ Underlined language reflects subject matter added to the original claims and strike-through indicates deletion.

~~partially, the pair of wheels, and wherein the housing defines a loading slot through which the string is loaded or and the loading slot is further configured for removal of the string removed from between the pair of wheels.~~

MTA Claims App. ii. As noted in our Preliminary Guidance, the Claims Appendix to the Motion lists proposed substitute claim 24 as depending from claim 1. *Id.*; Preliminary Guidance 4 n.3. We view this as a typographical error in view of Patent Owner stating that proposed substitute claim 24 depends from proposed substitute claim 21 in other portions of the Motion and refers to a “loading slot” that appears in proposed substitute claim 21, but not original claim 1. MTA Claims App. i–ii; MTA 8; Ex. 1001, 12:18–28. Therefore, we interpret proposed substitute claim 24 as depending from proposed substitute claim 21.

Patent Owner submits proposed claim 25 as a substitute for original independent claim 12, and we reproduce proposed substitute claim 25 below:

25. A method of propelling a looped string through air comprising:
receiving a looped string into a housing including a loading slot
between a pair of wheels, wherein said loading slot provides a mechanism to load and unload said looped string, wherein at least one of the pair of wheels is a driven wheel, wherein the looped string defines an axis along which the string extends, and wherein the looped string comprises a plurality of fibers extending away from the axis;
driving the at least one driven wheel;
propelling the looped string from the at least one driven wheel;
and
generating, from the looped string propelled by the at least one driven wheel, lift at an end of the looped string distal from the housing based on a surface texture of string configured to increase air friction in response to the looped string being propelled.

MTA Claims App. ii–iii.

Patent Owner submits proposed claims 26, 27, and 28 as substitutes for original claims 15, 16, and 17 and include amendments to respectively depend claim 26 from claim 25, substitute claim 27 from independent claim 16 (as well as other amendments), and depend claim 28 from claim 25. MTA Claims App. iii–iv.

B. Statutory and Regulatory Requirements

Patent Owner bears the ultimate burden to show that its motion to amend complies with the requirements of 35 U.S.C. § 316(d)(1), (3) and 37 C.F.R. § 42.121(a)(2), (a)(3), (b)(1), and (b)(2). Petitioner does not argue that Patent Owner fails to meet any of these requirements. *See generally* Opp. For the reasons discussed below, Patent Owner has shown by a preponderance of the evidence that it has satisfied the statutory and regulatory requirements associated with filing a motion to amend. *See* 37 C.F.R. § 42.121(d)(1).

A motion to amend must propose a reasonable number of substitute claims. 35 U.S.C. § 316(d)(1)(B); 37 C.F.R. § 42.121(a)(3). Patent Owner Motion proposes a reasonable number of substitute claims by proposing substitute claims 21–28 for original claims 1–4, 12, and 15–17. MTA 2, 5.

A motion to amend must respond to a ground of unpatentability involved in the proceeding. 37 C.F.R. § 42.121(a)(2)(i). Patent Owner’s Motion responds to a ground of unpatentability involved in this proceeding. *See* MTA 11–14.

A motion to amend may not enlarge the scope of the claims of the patent. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). Patent Owner’s Motion has not enlarged the scope of the claims of the patent. MTA 6–7. We note that proposed substitute claim 24 includes new limitations and

deleted limitations, but the deleted limitations correspond to limitations added to proposed substitute claim 21, from which claim 24 depends. MTA Claims App. i–ii. The remaining proposed amended claims add limitations to the claims, such that none of the proposed amendments enlarge the scope of the claims. *See id.* at i–iv.

A motion to amend may not introduce new subject matter. 35 U.S.C. § 316(d)(3); 37 C.F.R. § 42.121(a)(2)(ii). Based on our review of the record, Patent Owner’s Motion has not introduced new subject matter. Patent Owner has established that the cited portions of the ’774 patent’s specification provide support for the newly added limitations for the proposed substitute claims. MTA 7–10.

C. Unpatentability Arguments by Petitioner

1. Obviousness of Claims 21–26 and 28 over Wagner, Yeany, and Scorch

Petitioner argues that proposed substitute claims 21–26 and 28 would have been obvious in view of Wagner, Yeany, and Scorch. Opp. 1–11. Patent Owner disagrees. *See* MTA 13–14; PO MTA Reply 3–5. As discussed below, because the amendments include limitations already addressed in our analysis of the original claims, the parties arguments are largely the same as those already discussed above in the context of the original claims. For the reasons set forth below, we find that Petitioner establishes that proposed substitute claims 21–26 and 28 would have been obvious in view of Wagner, Yeany, and Scorch.

a. Proposed Substitute Claim 21

As noted above, proposed substitute claim 21 recites “wherein the housing covers, at least partially, the pair of wheels, and wherein the housing

defines a loading slot therein through which the string is loaded from between the pair of wheels.” MTA Claims App. i. Proposed substitute claim 21’s limitations mirror those of original claim 4, which includes the limitations of original claim 1.

Petitioner notes that its arguments in opposition to proposed substitute claim 21 mirror those addressing original claims 1 and 4 and argues that proposed substitute claim 21 would have been obvious “for the same reasons.” Opp. 2 (citing Pet. 71–78, 83–87; Pet. Reply 16–24). Petitioner argues that Wagner’s rotatable cup 100 and cover 150 function as a housing that at least partially covers wheels 50 and 60. *Id.* (citing Pet. 83–85). Petitioner also asserts that it would have been obvious to add a loading slot as taught by Scorch to Wagner’s housing. *Id.* at 2–7. More specifically, Petitioner contends that Scorch teaches “loading strings in ‘a slot in the side’ that allows one to ‘swap them [the strings] out really quick.’” Opp. 2 (citing Ex. 1007, 3:00–3:53; Ex. 1002 ¶¶ 172–173). Scorch teaches a funnel piece with a slot in its side so a user may “swap” (i.e., load and unload) strings. Petitioner also provides annotated versions of Wagner’s Figures 1 and 2 to demonstrate how Wagner’s housing would be modified in view of Scorch’s teachings. *See* Opp. 2–3 (citing Pet. 86; Ex. 1002 ¶ 175). Petitioner further cites reasons why one of ordinary skill in the art would have modified Wagner to use Scorch’s slot and to use Yeany’s string. *Id.* at 2 (citing Pet. 71–78, 83–87); *see also* Pet. MTA Sur-reply 1–3.

Patent Owner argues that Wagner fails to “teach a housing that covers the pair of wheels” and that neither Wagner nor Yeany “teach a housing that includes a loading slot through which the string is loaded from between the pair of wheels.” MTA 13–14 (citing Ex. ¶ 2002). In its Reply, Patent

Owner states that the “patentability of the claims at issue are discussed in the Patent Owner’s Response and Dr. Janét’s Opinion” and largely recaps those arguments at a high level without citing to any specific portion of the record for support. *See* PO MTA Reply 3–5. For example, Patent Owner reiterates its position from its Response that Petitioner’s proposed combination “results in a housing design that is impractical, unsuitable for a kinetic device, unsafe and unnecessarily complicated to use.” *Id.* at 4. Patent Owner also repeats its argument that Petitioner’s proposed combination “actually results in a worse design than if Wagner was left as-is” and Petitioner fails to articulate a sufficient rationale for the proposed combination. *Id.*

The parties’ arguments here in the Motion to Amend context mirror those we discussed above in the context of the challenges based on Wagner and Yeany for claim 1, and Wagner, Yeany, and Scorch for claim 4. The only arguably “new” argument stems from Patent Owner’s isolated statement that Wagner fails to “teach a housing that covers the pair of wheels.” MTA 13–14 (citing Ex. 2002). This new, one-sentence argument lacks any explanation or support in the record, and we need not attempt to discern the basis of such undeveloped arguments. *See Ajinomoto*, 597 F.3d at 1278 (holding that a single-sentence argument in a brief was insufficient to avoid waiver). The argument may even have been inadvertent, as Patent Owner did not repeat the argument in its Reply to Petitioner’s Opposition to the Motion, and counsel for Patent Owner conceded at the oral hearing that Wagner discloses the claimed housing. *See* PO MTA Reply 3–5; Tr. 24:19–24. In any event, we find Petitioner’s argument and evidence persuasive on this issue because Wagner clearly discloses a “housing [that] covers, at least

partially, the pair of wheels.” *See* Pet. 83–84 (citing Ex. 1008, Figs. 1, 3, 2:60–64, 3:13–21, 3:47–62; Ex. 1002 ¶ 171); Opp. 2; Ex. 1008, 2:26–27 (describing “drive wheels 50 and 60, and a housing 70”), 2:60–61 (“The housing 70 comprises a base 80 integrally extending from the handle 30, a rotatable cup 100 and a cover 150.”), Fig. 1 (showing drive wheels 50, 60 within housing 70).¹⁵ Wagner also clearly shows a string loaded between a pair of wheels, as proposed substitute claim 21 recites. *See id.* at Fig. 1.

The remaining arguments mirror those we addressed above, including the parties’ dispute over whether a POSITA would have been motivated to combine Wagner, Yeany, and Scorch. *See* MTA 13–14; Opp. 1–7; PO MTA Reply 4–5; Pet. MTA Sur-reply 1–3. For the same reasons discussed above in the context of Petitioner’s challenge to claim 4 based on Wagner, Yeany, and Scorch, we find that Petitioner proves by a preponderance of evidence that the combination discloses all of the limitations of proposed substitute claim 21 and that a POSITA would have been motivated to combine the references for the reasons Petitioner provides. *See* Opp. 2–7 (citing Pet. 71–78, 83–87; Ex. 1002 ¶¶ 144, 172–176; Ex. 2002 ¶¶ 187–188, 191).

Based on the foregoing, Petitioner demonstrates by a preponderance of the evidence that proposed substitute claim 21 would have been obvious in view of the combination of Wagner, Yeany, and Scorch.

¹⁵ Patent Owner also argues that Yeany fails to disclose the claimed housing and that neither Wagner nor Yeany disclose the claimed loading slot, but those arguments miss the mark because Petitioner relies on Wagner for the claimed housing, not Yeany, and Petitioner relies on Scorch for the claimed loading slot, not Wagner or Yeany. *See* MTA 13–14; Opp. 1–7; Pet. MTA Sur-reply 1–3; Pet. 75–76, 83–87.

b. Proposed Substitute Claim 25

As noted above, proposed substitute claim 25 recites a loading slot, “wherein said loading slot provides a mechanism to load and unload said looped string.” MTA Claims App. ii–iii. Petitioner addresses this limitation by reiterating that one of ordinary skill would have modified Wagner’s cover in view of Scorch’s loading slot, and that slot provides a mechanism to load and unload the string. Opp. 9–10 (citing Ex. 1002 ¶¶ 174–175). Patent Owner does not raise any additional arguments as to claim 25 in connection with this ground other than those addressed above in the context of claim 21. *See* MTA 13; MTA Sur-reply 3–5. We find Petitioner’s evidence and argument as to proposed substitute claim 25 persuasive because the proposed combination discloses the additional limitations added to proposed substitute claim 25. *See* Opp. 9–10.

Based on the foregoing, Petitioner proves by a preponderance of the evidence that proposed substitute claim 25 would have been obvious based on the combination of Wagner, Yeany, and Scorch.

c. Proposed Substitute Claims 22–24, 26, and 28

We have reviewed Petitioner’s arguments and rationales for proposed substitute claims 22–24, 26, and 28 based on the teachings of Wagner, Yeany, and Scorch. *See* Opp. 7–8, 10–11 (citing Pet. 39–45, 79, 82, 91–92; Ex. 1008, 2:23–33, 2:60–61, 6:32–34, Figs. 1, 3–5; Ex. 1002 ¶¶ 174–176). Patent Owner again argues, with respect to proposed substitute claim 24, that none of the asserted references teach a housing that covers a pair of wheels. MTA 13–14. For the reasons provided above in the context of our discussion of claim 21, we find this argument unpersuasive. Patent Owner does not otherwise dispute Petitioner’s showing as to proposed substitute

claim 24, or separately address proposed substitute claims 22–24, 26, and 28 in any manner. *See id.*; PO MTA Reply 4–5. We find Petitioner’s evidence and argument as to the undisputed aspects of proposed substitute claims 22–24, 26, and 28 persuasive, and we adopt it as our own.

Based on the foregoing, Petitioner proves by a preponderance of the evidence that proposed substitute claims 22–24, 26, and 28 would have been obvious based on the combination of Wagner, Yeany, and Scorch.

2. Obviousness of Claims 25, 26, and 28 over Abello and Yeany

Petitioner argues that proposed substitute claims 25, 26, and 28 would have been obvious based on Abello and Yeany. *See* Opp. 11–14; Pet. MTA Sur-reply 3–6. Patent Owner disagrees. *See* MTA 12; PO MTA Reply 5–6. We already found these same claims unpatentable as obvious based on Wagner, Yeany, and Scorch, and we provide the following analysis for completeness.

As noted above, Patent Owner proposes substitute independent claim 25 as a replacement for original claim 12, and proposed substitute claims 26 and 28 track original dependent claims 15 and 17, without adding further limitations to those claims. *See* MTA Claims App. ii–iv. Petitioner notes the similarity between proposed substitute claim 25 and original claim 12 and argues that proposed substitute claim 25 would have been obvious for the same reasons because Abello teaches the additional language as to the claimed “loading slot.” *See* Opp. 11–13 (citing Pet. 53–61, 64–67; Pet. Reply 12–15; Ex. 1002 ¶¶ 117–119). Petitioner also asserts that proposed substitute claims 26 and 28 would have been obvious based on Abello and Yeany for the same reasons as original claims 15 and 17. *See id.* at 13–14 (citing Pet. 62, 67–68, 71).

Patent Owner argues, with respect to proposed substitute claim 25, that “neither Abello nor Yeany teach a device that has a housing that includes a loading slot which is the mechanism in which a user can load and unload the looped string.” MTA 12. According to Patent Owner, “it would be impossible to include the limitation of [a] loading slot to a housing that neither Yeany nor Abello discloses” and Petitioner only provides conclusory testimony in support of the motivation to combine the references. PO MTA Reply 5.¹⁶ Patent Owner does not separately address proposed substitute claims 26 and 28 or argue that Petitioner failed to make an adequate showing as to these claims, except to note that its arguments as to proposed substitute claim 25 apply to those claims. *See id.* at 5–6.

Based on our review of the arguments and evidence, Petitioner carries its burden of showing that the combination of Abello and Yeany teaches all of the limitations of proposed substitute claims 25, 26, and 28. *See* Opp. 11–14 (citing Pet. 53–62, 64–68, 71; Pet. Reply 12–15; Ex. 1002 ¶¶ 117–119). Patent Owner raises a few sentences of general arguments without any elaboration or explanation. *See* MTA 12; PO MTA Reply 5–6. We find Patent Owner’s arguments unpersuasive even if we consider Patent Owner’s related, and slightly more fulsome, arguments in the Patent Owner Response. *See* PO Resp. 12–14. First, we agree with Petitioner that Abello discloses the claimed housing with a slot because it teaches a string loaded

¹⁶ Patent Owner also briefly argues that “neither Yeany nor Abello include a housing between a pair of wheels as disclosed in the ‘774 patent.” PO MTA Reply 5 (citing Ex. 2002 ¶ 117). But proposed substitute claim 25 does not require a “housing between a pair of wheels,” and counsel for Patent Owner clarified at oral hearing that no new argument was intended by this portion of the brief. *See* Claims. App. ii.; Tr. 32:10–33:16.

and unloaded from a slot (the “loading slot”) in a plastic sheath (the “housing”) and into a channel between the wheels. *See* Opp. 11–13 (citing Pet. 53–62, 64–67; Pet. Reply 12–15; Ex. 1002 ¶¶ 117–119); Pet. MTA Sur-reply 3–5. To the extent that Patent Owner maintains its argument that any reference to “housing” in proposed substitute claim 25 requires a housing that covers the pair of wheels, we find the argument unpersuasive for the reasons discussed above. Unlike proposed substitute claim 21, proposed substitute claim 25 does not include a limitation reciting a housing that “covers, at least partially, the pair of wheels.” MTA Claims App. i–iii.

As to motivation to combine, we find that Petitioner proves by a preponderance of evidence that a POSITA would have been motivated to combine the Abello and Yeany for the reasons provided by Petitioner. *See* Opp. 11 (citing Pet. 53–62, 64–68, 71; Pet. Reply 12–15); Pet. MTA Sur-reply 5–6. To the extent Patent Owner raised these arguments in the context of its Motion with the intent to rely on its previous arguments in the Patent Owner Response addressing the Abello and Yeany combination, we find those arguments unpersuasive for the reasons provided in our discussion above.

Based on the foregoing, Petitioner proves by a preponderance of the evidence that proposed substitute claims 25, 26, and 28 would have been obvious based on the combination of Abello and Yeany.

3. *Indefiniteness of Claim 25*

Proposed substitute claim 25 includes the phrase “wherein said loading slot *provides a mechanism* to load and unload said looped string.” MTA Claims App. ii–iii (emphasis added). Petitioner contends that the “full scope of Substitute Claim 25’s ‘mechanism’ is not reasonably certain”

because “Patent Owner’s argument and the specification of the ’774 Patent seem to indicate that the loading slot ‘is the mechanism.’” Opp. 14–15; *see also* Pet. MTA Sur-reply 6–8 (arguing that, per the specification, “the loading slot itself is the mechanism to load and unload” the string, but “is” and “provides” [in the claim] suggest different scope). According to Petitioner, “[t]o the extent that the claimed ‘mechanism’ is something other than the loading slot itself, it is not reasonably certain what that something else is.” Opp. 15. Petitioner further asserts that “there is no guidance on if the loading slot requires some specific structure to provide the claimed ‘mechanism’ (and what that structure would be) or if any loading slot that functions to guide looped string into the device and engagement with the drive wheel provides the claimed ‘mechanism.’” *Id.* Patent Owner argues that the limitation “would be clear” to a POSITA “when read in the context of the specification and drawings.” PO MTA Reply 6 (citing Ex. 1001, 10:42–44).

We find Petitioner’s indefiniteness arguments unpersuasive. Petitioner bears the burden of proving that the phrase “wherein said loading slot provides a mechanism” “fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014); *see also Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364, 1371 (Fed. Cir. 2014) (under *Nautilus*, “[t]he claims, when read in light of the specification and the prosecution history, must provide objective boundaries for those of skill in the art”). The claim language appears clear on its face, and the ’774 patent supports a straightforward meaning for the limitation when it states that “[t]he loading mechanism described herein functions as a guide to guide the

looped string into the device and into engagement with the drive wheel” which are functions performed by a loading slot. Ex. 1001, 8:44–46; *see also id.* at 10:42–11:2 (“The loading slot 101 . . . provides a mechanism by which a user can load and unload a looped string from the device quickly and easily.”). The fact that the specification suggests that the loading slot “is” the mechanism used to load and unload the string, as Petitioner contends, does not introduce any ambiguity because the claim already requires a loading slot that provides that same functionality. Opp. 14–15. Petitioner contends that “there is no guidance on if the loading slot requires some specific structure to provide the claimed ‘mechanism,’” but the claims do not require any specific structure beyond a loading slot itself. *Id.* at 15. Any such loading slot that “provides a mechanism to load and unload said looped string” satisfies the claim, but that breadth does not suggest indefiniteness. *See In re Miller*, 441 F.2d 689, 693 (CCPA 1971).

Based on the foregoing, Petitioner fails to prove by a preponderance of the evidence that proposed substitute claim 25 is indefinite.

4. Claim 27

Petitioner states that (1) proposed “[s]ubstitute Claim 27 is identical to claim 16 except it adds the additional limitations of claim 20;” (2) “[t]he Petition did not challenge claim 20 and Petitioner has no interest in this claimed subject matter;” and (3) “[a]s such, Petitioner has not considered or addressed whether Substitute Claim 27 is patentable or not.” Opp. 1 n.2. Although Petitioner does not address the patentability of proposed substitute claim 27, we note that we have the discretion to raise a new ground of unpatentability for a proposed substitute claim in view of all evidence of record, including any “[i]nformation identified in response to a Board-

initiated examination assistance.” 37 C.F.R. § 42.121(d)(3). The Motion to Amend here involves an atypical situation, where a proposed substitute claim includes limitations from unchallenged original claims that will remain in the ’774 patent regardless of the outcome of this proceeding, and where Petitioner does not oppose entry of the proposed substitute claim as part of the Motion to Amend. As stated in the Preliminary Guidance, under these circumstances, we decline to exercise our discretion to raise our own new grounds of unpatentability, whether based on the prior art of record or the results of Board-initiated examination assistance. Preliminary Guidance 14–15. Because Petitioner has not shown by a preponderance of the evidence in the record that proposed substitute claims 27 would have been unpatentable, and we decline to provide any new grounds of unpatentability, Patent Owner’s Motion to Amend is granted as to proposed substitute claim 27.

D. Conclusion on Motion to Amend

Petitioner has shown by a preponderance of the evidence in the record that the proposed substitute claims 21–26 and 28 are unpatentable as obvious, for the reasons provided above. Patent Owner’s Motion to Amend is granted as to claim 27, which Petitioner declined to challenge.

CONCLUSION¹⁷

In summary:

Claim(s)	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
1–3, 12, 15	102	Yeany	1–3, 12, 15	
1–3, 12, 15–17	103	Abello, Yeany	1–3, 12, 15–17	
1–3, 12, 15	103	Wagner, Yeany	1–3, 12, 15	
4, 16, 17	103	Wagner, Yeany, Scorch	4, 16, 17	
Overall Outcome			1–4, 12, 15–17	

Motion to Amend Outcome	Claim(s)
Original Claims Cancelled by Amendment	
Substitute Claims Proposed in the Amendment	21–28
Substitute Claims: Motion to Amend Granted	27
Substitute Claims: Motion to Amend Denied	21–26, 28
Substitute Claims: Not Reached	

¹⁷ Should Patent Owner wish to pursue amendment of the Challenged Claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner’s attention to the April 2019 Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding, 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. *See* 37 C.F.R. §§ 42.8(a)(3), (b)(2).

ORDER

In consideration of the foregoing, it is hereby:

ORDERED that claims 1–4, 12, and 15–17 of the '774 patent are determined to be unpatentable;

FURTHER ORDERED that Patent Owner's Motion to Amend is *denied* as to proposed substitute claims 21–26 and 28;

FURTHER ORDERED that Patent Owner's Motion to Amend is *granted* as to proposed substitute claim 27; and

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

IPR2024-01213
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