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Paper No. 40
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TOPGOLF INTERNATIONAL, INC.,
Petitioner,

v.

AMIT AGARWAL,
Patent Owner.

Case IPR2017-00928
Patent 5,370,389

Before LORA M. GREEN, MICHELLE N. WORMMEESTER, and AMANDA F. WIEKER, *Administrative Patent Judge*.

GREEN, *Administrative Patent Judge*.

FINAL WRITTEN DECISION
Determining That Claims 1 and 6 Have Been Shown to Be Unpatentable
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

TopGolf International, Inc. ("Petitioner") filed a Petition requesting an *inter partes* review of claims 1 and 6 of U.S. Patent No. 5,370,389 (Ex. 1001, "the '389 patent"). Paper 2 ("Pet."). Mr. Amit Agarwal ("Patent Owner"), acting *pro se*, filed a Preliminary Response to the Petition. Paper 6 ("Prelim. Resp."); *see also* Paper 7, 2 (suggesting that Mr. Agarwal seek the services of a registered patent attorney who is familiar with the *inter partes* review process). We determined that the information presented in the Petition and the Preliminary Response demonstrated that there was a reasonable likelihood that Petitioner would prevail in challenging claims 1 and 6 as unpatentable under 35 U.S.C. § 103(a). Pursuant to 35 U.S.C. § 314, the Board instituted trial on July 19, 2017, as to all of the challenged claims of the '389 patent. Paper 8 ("Institution Decision" or "Dec. Inst.").

Patent Owner filed a Response[1] (Paper 23, "PO Resp."), and Petitioner filed a Reply (Paper 27). Oral hearing was held on April 17, 2018, and a transcript of that hearing has been entered into the record. Paper 37 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. Petitioner bears the burden of proving unpatentability of the challenged claims, and that burden never shifts to Patent Owner. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). To prevail, Petitioner must establish

[1] Patent Owner originally filed a Patent Owner Response at Paper 22, which was not in compliance with the word count required by 37 C.F.R. § 42.24(b). Patent Owner than filed a redacted copy of the Patent Owner Response that was in compliance with the required word count as Paper 23. After oral hearing, in which we inquired whether either party he had any objections to our expunging the non-compliant Patent Owner Response, and both parties stated that they did not, we expunged Paper 22. Tr. 4.

facts supporting its challenge by a preponderance of the evidence. *See* 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

Based on the record before us, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 6 of the '389 patent are unpatentable.

A. Related Proceeding

According to the parties, the '389 patent is at issue in one pending litigation: *Agarwal v. TopGolf International, Inc.*, Case No. 8:16-cv-02641-VMC-JSS (M.D. Fl.). Pet. 1; Paper 3, 1.

B. The '389 Patent (Ex. 1001)

The '389 patent issued on December 6, 1994, with Douglas J. Reising as the listed inventor. Ex. 1001. The '389 patent relates to a golfing game

> which allows a player to practice both long-range and close-range shots while aiming for different target greens located at varying distances from the teeing area. If the player lands a ball on one of the greens, he receives a score on a visual display that is located near the teeing area so the player can easily see his score. Each of the greens is sloped so that a ball that lands upon the greens' surface will roll into a hole located at the lowest point of the surface. Each ball has a distinctive marking, either a color code or a bar code, so that it can be determined from which tee the ball was hit. After the ball rolls into the hole of a green, a sensor scans the ball and identifies from which tee the ball was hit. After the ball rolls into the hole of a green, a sensor scans the ball and identifies from which tee the ball came. A score is then added to the visual display at the corresponding tee. Each green can have a different point value, depending upon the difficulty of the golf shot required to land on that green.

Id., Abstract. In particular, the '389 patent teaches that the "invention will be specifically disclosed in connection with such a range in which the target

greens are sloped so that a golf ball landing on each green will roll into a hole containing a sensor that can identify from which tee the ball was hit." *Id.* at 1:11–15.

The '389 patent teaches that "[e]xisting driving ranges often have small greens that include target flags at which to aim." *Id.* at 1:48–49. According to the '389 patent, the greens may be located from as little as 100 to more than 250 yards from the tee. *Id.* at 1:49–52. Such ranges, however, "do not . . . include any type of automatic scoring capabilities." *Id.* at 1:55–56.

The '389 patent teaches further that available golfing games that provide an automatic score are designed for putting or short distance chipping. *Id.* at 1:61–64. Moreover, in such games, the '389 patent notes, "the targets are so small and at such a distance that it would be very difficult to obtain any score whatsoever." *Id.* at 1:64–67. In addition, the '389 patent states that "each of the games available at the present time requires construction of a special facility and could not be easily retrofitted into an existing driving range." *Id.* at 1:67–2:2. The '389 patent teaches also that "[n]one of the prior art games are intended for use as a driving range to practice driving skills at realistic distances." *Id.* at 2:2–4. Thus, a primary object of the invention of the '389 patent is "to provide a golfing game which can be retrofitted into an existing driving range in which the golfer attempts to place his ball upon one of several target greens," wherein "a score is indexed at a distance near the golfer's location." *Id.* at 2:7–12.

Figure 3 of the ’389 patent is reproduced below:

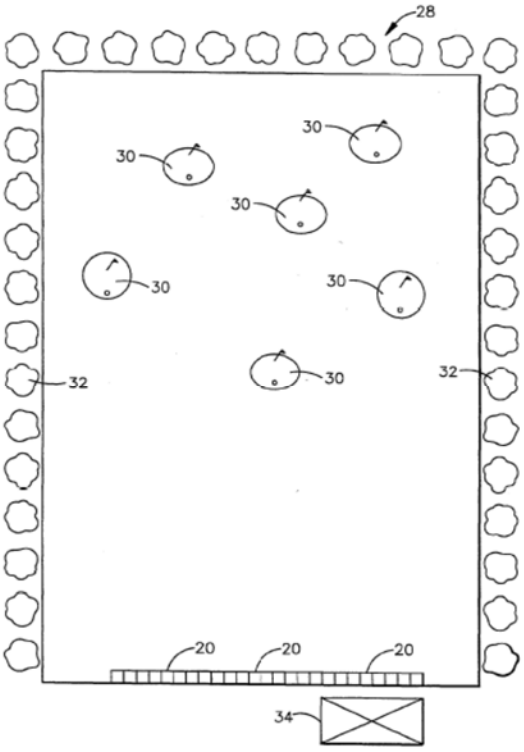


FIG. 3

Figure 3 “is a plan view of an entire driving range constructed in accordance with the principles of the present invention.” *Id.* at 3:21–23. As can be seen in Figure 3, a driving range 28, which may be bordered by trees 32, has a number of target greens 30 that are positioned at various distances and locations from the teeing area 20. *Id.* at 4:13–18. According to the ’389 patent, “[e]ach target green contains a graded rear portion which allows the player to see his ball hitting the green before the ball rolls down into a receptacle hole.” *Id.* at 2:51–53.

Figure 4 of the ’389 patent illustrates a target green according to the invention. Figure 4A is reproduced below:

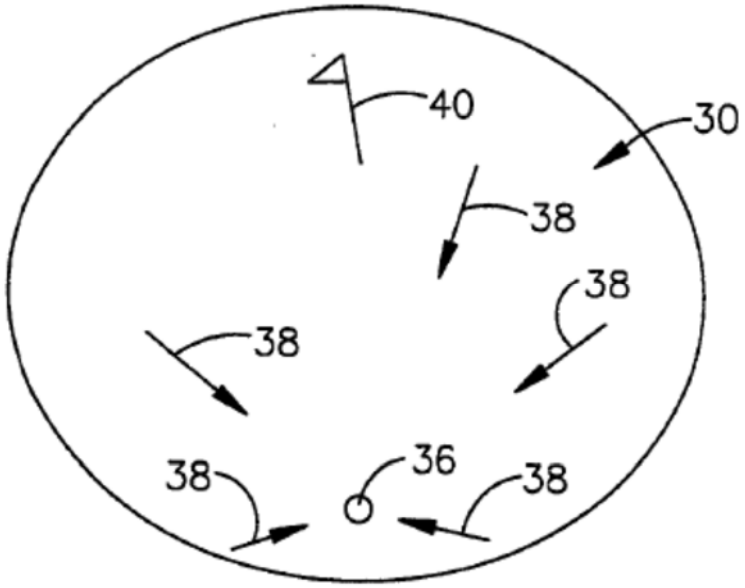


Figure 4A shows “a plan view of one of the target greens of the driving range” of Figure 3. *Id.* at 3:24–25.

As shown in the Figure, a target green 30 includes a target flag 40, as well as a receptacle hole 36. *Id.* at 4:29–30. The receptacle hole 36 is located near the front portion of the green and the green is sloped downhill such that the receptacle hole 36 is at the lowest point of the green. *Id.* at 4:30–35. The arrows 38 show the direction of slope on the target green. *Id.* at 4:35–36. As taught by the ’386 patent, “[t]arget green 30 is sloped downhill, having the general shape of a concave surface, so that the receptacle hole 36 is at the lowest portion of target green 30.” *Id.* at 4:32–35. The target flag 40 may be located at any position on the green. *Id.* at 4:55–56.

Figure 4B is reproduced below:

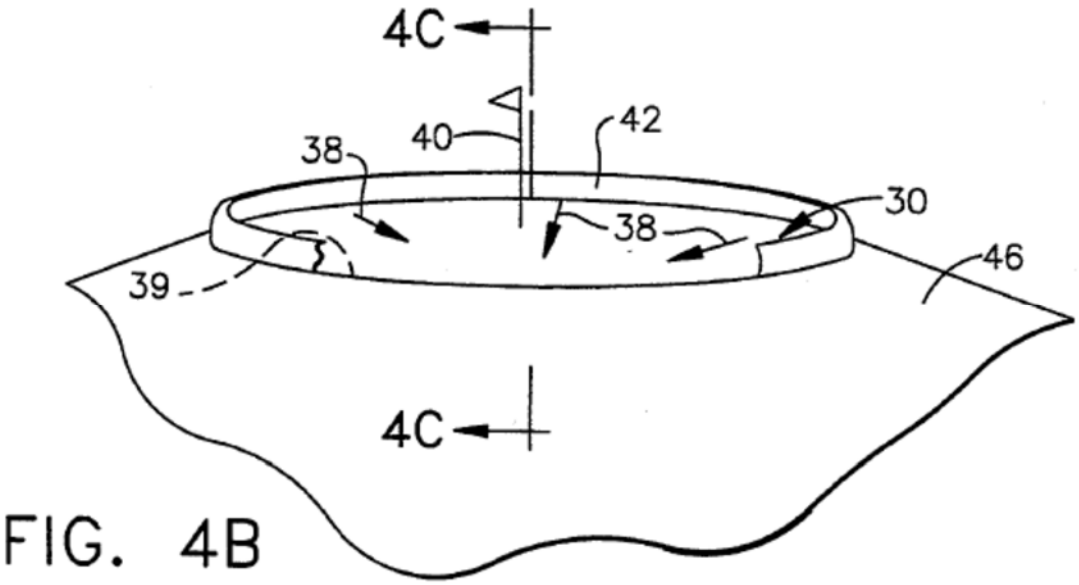


FIG. 4B

Figure 4B "is an elevational view of the target green as viewed from the bottom" of Figure 4A. *Id.* at 3:26–27.

The '389 patent teaches that as shown in the above Figure, "[t]arget green 30 would appear to the golfer at the teeing area 20 to have a sudden drop off near the front portion of the green, and then a gradual slope upwardly toward the back of the green." *Id.* at 4:37–40.

Figure 4C is reproduced below:

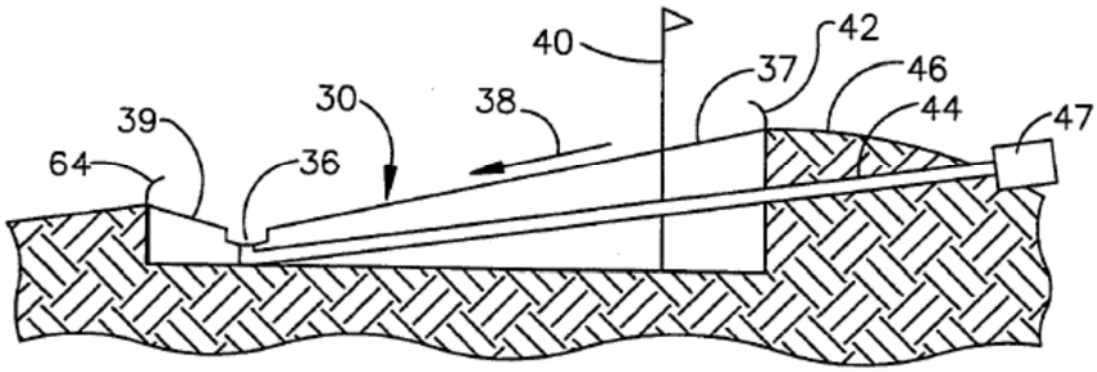


Figure 4C shows "a cross-sectional view of the target green of FIG. 4B, taken along section line 4C–4C." *Id.* at 3:28–29. As can be seen in the

Figure, the target green "contains a graded rear portion which allows the player to see his ball hitting the green before the ball rolls down into a receptacle hole, which is located at the lowest point of [the] green." *Id.* at 2:51–54.

The '389 patent teaches that the surface of the green is preferably a heavy duty, high performance fabric, wherein the material "has sufficient compliance to absorb the impact of a golf ball . . . such that the ball . . . will not bounce away from the target green." *Id.* at 5:29–32. The use of such a material, the '389 patent teaches, "allows a person playing the game to have a higher score by 'trapping' balls which otherwise would bounce off the green." *Id.* at 5:32–34.

C. Illustrative Claim

Petitioner challenges claims 1 and 6 of the '389 patent. Claim 1 is the only independent challenged claim, is representative, and is reproduced below (formatting and emphasis added):

> 1. A method for playing a point-scoring game at a golfing range comprising the steps of:
>
> (a) providing a plurality of golfing tees, each of which has an associated scoring device and a plurality of golf balls;
>
> (b) providing each golf ball with an identifying characteristic which makes it possible to determine from which tee the golf ball originated;
>
> (c) striking one of said golf balls at one of the plurality of golfing tees;
>
> (d) providing a plurality of target greens which are *remotely located* from the plurality of golfing tees, each target green having a front portion and a rear portion,
>
> > providing each target green with a receptacle hole and sloping the surface of each target green in a manner to cause said golf ball, once it lands upon the target green, to roll into said receptacle hole,

said sloped surface forming an asymmetrical concave shape, said sloped surface having said receptacle hole located at its lowest point,

said sloped surface having a profile, as viewed from the side of said target green, which is greatest in elevation at it rearmost end located at the rear portion of the target green furthest from said golfing tees,

said profile continuously sloping downward toward the front portion of the target green nearest to said golfing tees, until arriving at said receptacle hole,

said downward slope travelling substantially more than one-half the distance between the front and rear portions of the target green,

said profile, as it continues forward from said receptacle hole, continuously sloping upward toward the front portion of the target green,

said profile's forward most end located at the forward portion of the target green having an elevation that is *significantly lower* than at its rearmost end,

said upward slope travelling substantially less than one-half the distance between the front and rear portions of the target green;

(e) sensing said identifying characteristic of the golf ball, and identifying from which of said plurality of golfing tees the golf ball originated; and

(f) *indexing* the score of the scoring device which is located at the golfing tee corresponding to the identifying characteristic of said golf ball.

Ex. 1001, 9:24–68.

Dependent claim 6 adds the limitation of "wherein the step of indexing the score of said scoring device provides a different score value for each of said target greens." *Id.* at 10:18–21.

D. Instituted Challenge

We instituted trial based on the sole ground of unpatentability presented in the Petition (Dec. Inst. 22; Pet. 3):

References	Basis	Claims Challenged
Bertoncino[2] and Foley[3]	§ 103	1 and 6

Petitioner relies also on the Declaration of Richard Robbins (Ex. 1003).

Patent Owner relies on the Declarations of Michael Hurdzan, Ph.D. (Ex. 2012) and James Bertoncino (Ex. 2013).

II. ANALYSIS

A. Claim Construction

Petitioner asserts, and Patent Owner does not contest, that the '389 patent expired as of September 2012. Pet. 9. The Board's review of the claims of an expired patent is similar to that of a district court's review. *In re Rambus, Inc.*, 694 F.3d 42, 46 (Fed. Cir. 2012). We are, therefore, guided by the principle that the words of a claim "are generally given their ordinary and customary meaning" as understood by a person of ordinary skill in the art in question at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (en banc) (internal citation omitted). "In determining the meaning of [a] disputed claim limitation, we look principally to the intrinsic evidence of record, examining the claim language itself, the written description, and the prosecution history, if in evidence." *DePuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 469 F.3d 1005, 1014

[2] Bertoncino, U.S. Patent No. 5,439,224, issued August 8, 1995 (Ex. 1004).

[3] Foley, U.S. Patent No. 5,163,677, issued November 17, 1992 (Ex. 1006).

(Fed. Cir. 2006) (citing *Phillips*, 415 F.3d at 1312–17). There is a "heavy presumption," however, that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir. 2002) (citation omitted).

In the Institution Decision, we determined that none of the terms in the challenged claims required express construction at that time. Dec. Inst. 7 (citing *Wellman, Inc. v. Eastman Chem. Co.*, 642 F.3d 1355, 1361 (Fed. Cir. 2011) ("[C]laim terms need only be construed 'to the extent necessary to resolve the controversy.'") (quoting *Vivid Techs, Inc. v. Am. Sci. & Eng'g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999)). For purposes of this Decision, we determine that only the following claim term requires express construction.

"providing a plurality of target greens which are remotely located from the plurality of golfing tees"

Patent Owner contends that the above phrase should be construed as "providing a plurality of target greens at realistic distances so as to enable a golfer to practice driving skills." PO Resp. 3 (emphasis removed). Patent Owner cites *Liberty Ammunition, Inc. v. U.S.*, 835 F.3d 1388, 1395 (Fed. Cir. 2016), *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S.Ct. 2120 (2014), and *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d 1364 (Fed. Cir. 2014), to support that construction. PO Resp. 3–5. Those cases, Patent Owner asserts, support the proposition that "[c]laim construction of terms of degree requires identification of an objective boundary in the intrinsic record." *Id.* at 4.

In particular, Patent Owner states that the Federal Circuit held, in the context of a firearm projectile, that "the term 'reduced area of contact' was a term of degree because it necessarily called for a comparison against some objective baseline." *Id.* at 3–4. Thus, Patent Owner asserts, the claim term

"remotely," is also a term of degree, and it too requires "calling for a comparison against some objective baseline." *Id.* at 4.

In *Liberty Ammunition*, Patent Owner avers, the claims did not specify the comparison, but the specification disclosed that the projectile had a reduced area of contact as compared to conventional projectiles, and the only conventional projectile taught by the specification was a M855 round. *Id.* (citing *Liberty Ammunition*, 835 F.3d at 1396). Patent Owner asserts that the "Federal Circuit had to squint to ascertain the objective baseline the *Liberty Ammunition* patentee intended for the claimed invention to improve upon," and "went so far as considering the title of a fact section in the patentee's appellate brief, 'Background: The Army's M855 Standard Rifle Round – Its Deficiencies and the Quest to Replace It.'" *Id.* at 5 (citing *Liberty Ammunition*, 835 F.3d at 1396).

The patent challenged in the instant proceeding, Patent Owner asserts, "could not have been more explicit and pointed" as to the improvement provided—to provide a driving range to allow a player to practice driving skills at realistic distances, which is also supported by expert testimony. *Id.* at 5–6 (citing Ex. 1001, 2:2–5, 1:21–23, 1:33–38, 1:44–47, 1:60–67, 2:2–5, 2:7–17; Ex. 2012 ¶¶ 12–15; Ex. 2013 ¶ 12).

In addition, Patent Owner asserts, if "remotely" were to be construed as "at a distance," that construction

> could implicate a point-scoring game which does **not** (i) enable a player to hit *any* club other than the pitching wedge; (ii) enable a player to practice driving skills at a realistic distance; (iii) allow retrofitting into a driving range. That is, the construction "at a distance" would untether the claim from anything within healing distance of the invention described in the '389 patent.

Id. at 14.

Patent Owner asserts further that Petitioner's expert also rejected the construction of "remotely located" as being "at a distance." PO Resp. 9 (citing Ex. 2011, 9:58:38). In particular, Patent Owner asserts, Petitioner's expert, Mr. Robbins, testified that "remotely located" should be construed as referring to a range of 50 to 300 yards. *Id.* (citing Ex. 2011, 9:58–38). According to Patent Owner, the '389 patent's "incremental advance over the prior art is curing the prior art's shortcoming, identified with specificity and particularity—enabling players to 'practice driving skills at realistic distances.'" *Id.*

According to Patent Owner:

> Construing "remotely" to simply mean "at a distance" violates *Nautilus* by neglecting to identify an objective baseline for this term of degree and violates *Phillips* by construing the word "remotely" in the abstract with a blind eye to the specification which clarifies that the claimed invention overcame the prior art's lack of support for practicing driving skills at realistic distances.

Id. at 10. Moreover, Patent Owner avers, construing "remotely" as "at a distance" does not provide any upper bounds, such as 500 yards, 1 mile, 2 miles, etc. *Id.*

Petitioner responds that the "ordinary meaning of 'remote' is 'far apart' or 'distant' but does not impose any rigid threshold." Reply 2 (citing Ex. 1009, 1139). According to Petitioner, the '389 patent suggests that the greens may be a wide range of distances from the tees, as it notes that existing driving ranges may have small greens that are "'typically located' from 100–250 yards away." *Id.* (citing Ex. 1001, 2:7–9, 1:48–52). Moreover, Petitioner argues, the "'389 patent never adopts a narrower

definition nor disavows claim scope." *Id.* Petitioner asserts that an object of the '389 patent "is to allow a player to 'practice his ***golfing*** skills at realistic distances,' which encompasses practicing ***any*** golf shot." *Id.*

According to Petitioner, its expert, Mr. Robbins, testified "that a skilled artisan would understand 'remotely' to mean that the target is 'at some distance from the place where you are hitting the golf ball, and that remote [target] could be any number of distances because typically there's more than one target on a practice range.'" *Id.* at 3 (citing Ex. 2011, 15:16–20, 158:24–159:12). Thus, Petitioner argues, Mr. Robbins never limited "remotely" to driver shots, but instead testified that remotely would include distances from 50 to 300 yards from the tee, as "[g]olfers at practice ranges want to practice all kinds of shots, so they may be hitting anything from a sand wedge to a driver." *Id*. (quoting Ex. 2011, 18:23–19:10 (alteration original)). In addition, Petitioner asserts, neither of Patent Owner's experts argue that "remotely" should be limited to a target green for practicing driving skill, noting rather that the term would include such targets. *Id.* at 3–4 (citing Ex. 2012 ¶ 13; Ex. 2013 ¶ 12).

We decline to adopt Patent Owner's proposed construction of "providing a plurality of target greens which are remotely located from the plurality of golfing tees" as "providing a plurality of target greens at realistic distances so as to enable a golfer to practice driving skills," as that construction is not supported by the specification of the '389 patent, nor is it supported by any expert testimony as argued by Patent Owner. Moreover, we decline to limit the claim as encompassing only those target greens that are at a distance for use with just a driver.

Specifically, the '389 patent discloses a golfing range that "allows a player to practice both long-range and close-range shots while aiming for different target greens located at varying distances from the teeing area." Ex. 1001, Abstract. The '389 patent notes that, at the time of invention, driving ranges were in existence in which target greens may be located from 100 to more than 250 yards from the driving tees. Ex. 1001, 1:49–52. As taught by the '389 patent, the issue with those ranges is that automatic scoring was not available. *Id.* at 1:55–56.

We acknowledge that the '389 patent does state, in the context of "presently available golfing games that give a player an automatic score," that "[n]one of the prior art games are intended for use as a driving range to practice driving skills at realistic distances." *Id.* at 1:61–2:4. Thus, one of the objects of the '389 patent is "to provide a driving range game in which the player can practice his golfing skills at realistic distances and optionally have his score indicated on a display." *Id.* at 2:13–16. Additionally, the '389 patent teaches that the target green may "be installed at any existing driving range." *Id.* at 8:59–60.

The '389 patent is, therefore, drawn to a driving range that allows the player to practice golfing skills, including both "close-range" and "long-range" shots. Ex. 1001, Abstract. The statement of the '389 patent relied upon by Patent Owner to limit the target greens to those for use with a driver, that is "[n]one of the prior art games are intended for use as a driving range to practice driving skills at realistic distances," is in the context of golf games that provide automatic scoring to the player.

We disagree with Patent Owner that the improvement provided by the '389 patent is to provide a driving range to allow a player to practice driving

skills at realistic distances. Rather, as discussed above, the '389 patent notes that at the time of invention driving ranges were known, and in fact, the claimed golfing game could be installed into existing driving ranges. That finding is consistent with the Declaration of one of Patent Owner's experts, Mr. Hurdzan. That is, Mr. Hurdzan stated that he agrees "with Mr. Robbins that the reason a driving range is called a 'driving' range is because historically, most people went there for that purpose—to drive the ball as far as they could." Ex. 2012 ¶ 14. We note further that Patent Owner stated during the oral hearing that "the claims are not limited to a driver." Tr. 30:3.

Thus, as taught by the specification of the '389 patent, the claimed target green may be at a distance that allows the golfer to practice golfing skills, and may be used with any club, such as a wedge, iron, or driver, and is not limited to a game that provides target greens at a distance at which only a driver may be used.

B. Obviousness Over the Combination of Bertoncino and Foley

Petitioner contends that claims 1 and 6 are rendered obvious by the combination of Bertoncino and Foley. Pet. 22–60. Patent Owner disagrees with Petitioner's contentions, asserting that the Petition fails to demonstrate the obviousness of the challenged claims by a preponderance of the evidence. PO Resp. 26–69.

i. Overview of Bertoncino (Ex. 1004)

Bertoncino discloses:

> A golf range comprising a series of independent targets, each of which consists of a sloped area located at a different distance from a multiplicity of tee stands. The range is also equipped with a scoring system that uses Universal Product Codes on each ball, optical scanners located at each target, and a programmed computer to identify each ball passing through

> the target and to record pertinent information and statistics to provide golfers with a record of the number and length of shots taken.

Ex. 1004, Abstract. In particular, Bertoncino teaches driving and/or chipping ranges that "provide[ ] golfers with entertainment and an opportunity to improve their distance and directional skills for driving and/or chipping." *Id.* at 1:10–16.

According to Bertoncino, "[t]he golfer's ability to judge the length of his drive or chip is dependent upon his ability to follow visually the path of the ball and see the lie (the actual spot where the ball lands after being hit)." *Id.* at 1:26–30. Bertoncino teaches that factors that may affect the visibility of seeing the lie of the ball include

> the golfer's eyesight; inadequate lighting attributable to natural shading, time of day or dim or poorly directed artificial light; excessively bright lighting from the sun . . .; natural physical obstructions such as trees, bushes, grasses, terrain imperfection; and the presence of other balls that have come to lie at approximately the same place and are generally indistinguishable from each other even at relatively short distances.

Id. at 1:30–40. Thus, Bertoncino teaches an object of the invention "is to provide a means for measuring with a degree of exactness the length of the golfers' drive or chip without depending on his ability to follow visually the path of the ball." *Id.* at 1:40–44.

Figure 3 of Bertoncino is reproduced below:

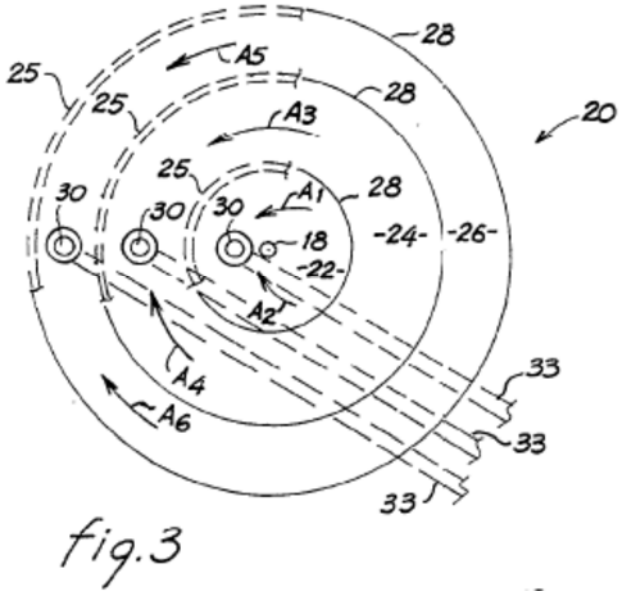


Figure 3 of Bertoncino shows a "plan view of a sloped circular target including three separate and concentric sections." *Id.* at 4:6–7. According to Bertoncino, the target 20 preferably has the "general visual characteristics of a golf course green, but not necessarily as large." *Id.* at 5:30–32. Bertoncino teaches that the target 20 "comprises a surface generally sloped toward the tee stands area." *Id.* at 5:37–39.

Bertoncino teaches further:

> Target 20 and flag 18 optionally simulates a green on a golf course. Thus, for example, a target may contain an inner section 22 surrounded by a concentric intermediate section 24, which is itself surrounded by a concentric outer section 26. . . . [T]he three inner, intermediate and outer sections (or any different number of sections chosen to be included in the target area, including only one) can obviously vary in size and shape, but are illustrated here as having annular shapes for simplicity.

Id. at 5:43–52. That is, Bertoncino teaches that "the target 20 may comprise a single section 22 with a single cup 30 connected to the lowest point in its surface." *Id.* at 6:63–65.

Figure 4 of Bertoncino is reproduced below:

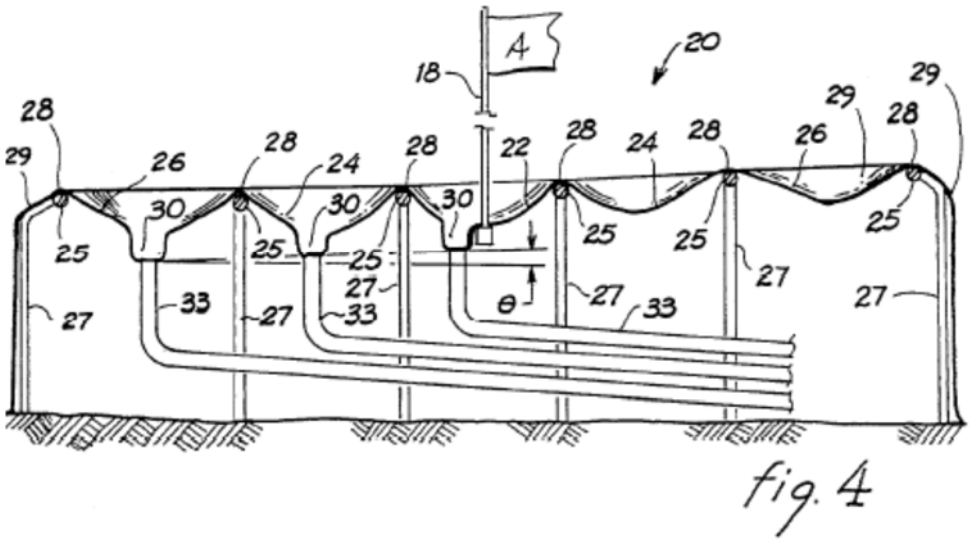


Figure 4 of Bertoncino shows a cross-sectional view of the sloped circular target shown in Figure 3, reproduced above, "illustrating the channel geometry and the ball-retrieval piping system associated with each section." *Id.* at 4:8–11. Bertoncino teaches that the inner section 22 preferably comprises a concave structure, and a receiving cup 30 is located at the lowest spot in the section, which ensures that any ball that is hit into the section will roll into the cup 30 by the force of gravity. *Id.* at 5:54–60. In addition, Bertoncino teaches that the highest part of inner section 22 is the circumferential rim 28, a ball that comes to lie in that section is trapped and is unable to move outside the rim—rather, it rolls into the cup due to gravity. *Id.* at 6:17–23. Bertoncino teaches also that the surface of each section of the target may be made or lined with a shock-absorbing material that allows the golf ball to remain where it lands. *Id.* at 6:33–39.

Figure 5 of Bertoncino is reproduced below:

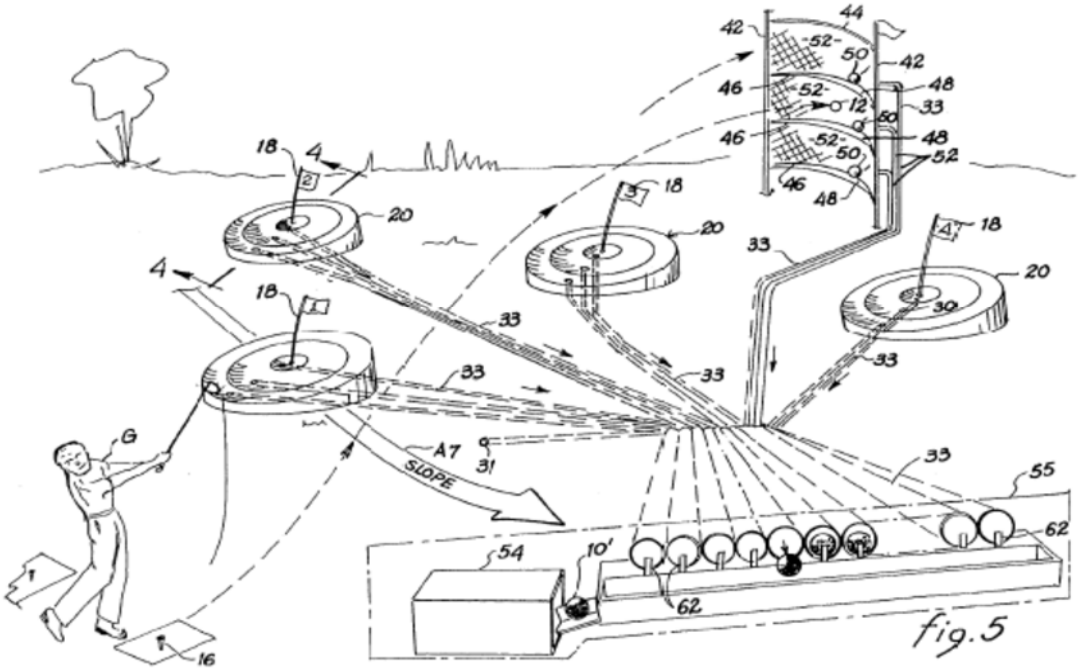


Figure 5 is "a schematic perspective of a sloped driving range" according to Bertoncino. *Id.* at 4:12–13. Note that Figure 4 is a cross-section along line 4-4 of Figure 5 (in the upper left corner of Figure 5). *Id.* at 4:8–11.

ii. Overview of Foley (Ex. 1006)

Foley is drawn to a "golf driving-range for driving golf balls from any of a series of tee-points grouped together to a single common golf driving fairway having a plurality of spaced-apart greens each with a flagged hole." Ex. 1006, Abstract. Foley teaches that on one or more of the golf greens there are golf ball percussion devices, such infra-red ray detectors, which detect balls that strike or roll across the green. *Id.* at 4:62–68. A signal is then sent through a computer and digitizer and fed to the booth from which a ball was most recently struck. *Id.* at 4:68–5:4. According to Foley, higher

values or scores are assigned to particular greens depending on the distance or difficulty to hit the green from the teeing area. *Id.* at 5:6–21.

iii. Principles of Law

A claim is unpatentable under 35 U.S.C. § 103(a) if "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). "If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability." *Id.* at 418. 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) objective evidence of nonobviousness, *i.e.*, secondary considerations. *Id.* at 406 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966)). The Supreme Court has recently emphasized that "the [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ." *Id.* at 418; *see also id.* at 421 ("A person of ordinary skill is also a person of ordinary creativity, not an automaton.").

The obviousness analysis requires that "the factfinder should further consider whether a person of ordinary skill in the art would [have been] motivated to combine those references, and whether in making that combination, a person of ordinary skill would have [had] a reasonable expectation of success," even "[i]f all elements of the claims are found in a

combination of prior art references." *Merck & Cie v. Gnosis S.p.A.*, 808 F.3d 829, 833 (Fed. Cir. 2015). We analyze the asserted grounds of unpatentability in accordance with the above-stated principles.

iv. Analysis

Petitioner relies on Bertoncino for teaching every element of claim 1, noting that Bertoncino shows receiving the score card at the club house, rather than a scoring device located at each tee. Pet. 21. According to Petitioner, such scoring devices were well known in the art at the time of invention, as exemplified by Foley. *Id.* at 21–22. Because of the length and multiple recited elements of claim 1, we address each element of the claim as set forth below.

a. "A method for playing a point-scoring game at a golfing range comprising the steps of"

According to Petitioner, both Bertoncino and Foley "disclose 'a method for playing a point-scoring game at a golfing range.'" Pet. 23 (citing Ex. 1003 ¶¶ 59–61). For example, Petitioner asserts that Bertoncino teaches a golf range in which players hit balls from a tee, wherein each hole on a target green is associated with a particular number of points, and the player receives a score card showing the points they have obtained. *Id.* (citing Ex. 1004, Abstract, 4:21–23, 8:55–63, 9:11–22, 10:5–13, 10:18–51, 10:52–11:3, Figs. 5, 8; Ex. 1003 ¶ 60). In addition, Petitioner asserts that Foley "discloses a 'golf driving-range for driving golf balls from any of a series of tee-points grouped-together to a single common golf driving fairway having a plurality of spaced-apart greens each with a flagged hole,' where each green has a particular score, and the system assigns a player that score when one of his or her balls passes through the hole." *Id.* at 23–24 (citing Ex. 1006, Abstract, 5:6–30, Fig. 1; Ex. 1003 ¶ 61).

We agree with Petitioner, and find that both Bertoncino and Foley teach this limitation. For example, Bertoncino teaches that the balls used on a driving range are coded, such that they can be scanned to provide a scoring system that allows a golfer to keep track of the number and length of shots taken. Ex. 1004, Abstract; *see also id.* at 3:20–39 (noting that using an universal code on a golf ball allows the ball to be identified in order to calculate, print, and store statistics regarding a golfer's performance). In addition, Foley teaches a golf driving range that allows a golfer to keep score, wherein a significantly improved score may be a higher score or a lower score. Ex. 1006, 5:5–30.

b. "(a) providing a plurality of golfing tees, each of which has an associated scoring device and a plurality of golf balls"

Petitioner asserts that the combination of Bertoncino and Foley teaches this limitation. *Id.* at 24 (citing Ex. 1003 ¶¶ 62–68; Ex. 1004, 3:19–32, 5:17–29, 8:32–63, 9:32–54, Figs. 2, 8; Ex. 1006, 4:12–19, 6:26–52, Figs. 1, 3).

Specifically, Petitioner asserts that Bertoncino teaches a plurality of golf tees, each having a bucket of golf balls, as well as an associated scoring device. *Id.* According to Petitioner, "the balls at each tee stand are associated with a unique name, numbers, or other identifying code or symbol unique to a particular player, which is used to calculate the score for the player at that tee," wherein the system automatically calculates a score for a player at a given tee. *Id.* at 24–25 (quoting Ex. 1004, 5:17–24; citing Ex. 1003 ¶¶ 63–64; Ex. 1004, 9:45–54, 9:63–10:17, Fig. 2).

Petitioner notes that Bertoncino teaches that the players obtain their scorecard that is automatically generated at the clubhouse at the end of the

round, and not at the tee. *Id.* at 25 (citing Ex. 1004, 10:52–59, 9:55–10:5). Petitioner contends, however, that "[p]roviding a plurality of tees each with its own associated scoring device[] was well-known in the prior art." *Id.* at 26. In that regard, Petitioner cites Foley as an example of a golf-driving range wherein each tee has an associated scoring device. *Id.* Foley, Petitioner asserts, teaches that each tee booth has associated monitor 35, as shown in Figure 1. *Id.* (citing Ex. 1006, Figs. 1, 3, 4:16–19, 5:6–21, 6:32–53; Ex. 1003 ¶ 65). In particular, Petitioner asserts that Foley teaches that the score on the monitor is updated each time the golfer hits a target. *Id.* at 27.

Petitioner contends that the ordinary artisan would have had a reason to "incorporate Foley's concept of having an individual scoring device" to provide each golfer's score as taught by Bertoncino in order to provide a real-time score during play of the game. *Id.* at 28–29 (citing Ex. 1003 ¶¶ 64, 67, 68, 100). Petitioner asserts further that the ordinary artisan would have had a reasonable expectation of success of having an individual scoring device at the tees of Bertoncino because Bertoncino teaches an automated system that tracks each golfer's scores and stores those scores in a centralized computer, and it would have been well within the level of skill of the ordinary artisan to include individual scoring devices at each tee as taught by Foley. *Id.* at 30 (citing Ex. 1004, 9:55–10:17; Ex. 1003 ¶¶ 68, 102). According to Petitioner, such a substitution is a simple "substitution of one known element for another to obtain a predictable and improved result." *Id.* (citing *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007)).

We agree with Petitioner, and conclude that the combined teachings of Bertoncino and Foley satisfy this limitation, and that it would have been

obvious for a person of ordinary skill in the art to have combined them. That is, Bertoncino teaches a plurality of golf tees, each having a bucket of golf balls, as well as an associated scoring device. Specifically, Bertoncino teaches a "golf range comprising a series of independent targets, each of which consists of a sloped area located at a different distance from a multiplicity of tee stands." Ex. 1004, Abstract. Bertoncino teaches also that an attendant will assign a tee stand and provide a container of balls to each golfer. *Id.* at 9:32–35. The attendant feeds the container number into the computer, which triggers the identification of all the balls in the container, as well as the tee stand assigned to the golfer. *Id.* at 9:35–41. Thus, the universal product code then can be associated with the tee stand used by any particular golfer. And since the computer knows the balls assigned to a golfer, as well as the tee stand, it can use that information to generate any desired statistic. *Id.* at 9:49–54.

Bertoncino teaches that the golfer receives his scorecard at a clubhouse after he or she completes the golfing session. *Id.* at 10:52–54. Bertoncino, therefore, does not specifically teach or suggest providing the scoring device at the tee. Foley, however, is also drawn to a golf driving range. Ex. 1006, Abstract. Foley uses golf-ball percussion detectors, such as infrared ray detectors that detect balls that strike or roll across the green. *Id*. at 4:62–68. The signal is sent through a conventional computer and fed to a selected booth, *i.e.*, tee stand. *Id.* at 4:68–5:5. Thus, Foley expressly teaches sending a golfer's score to their tee stand.

Both Foley (Ex. 1006, 4:62–5:5) and Bertoncino (Ex. 1004, 11:4–19) teach the use of conventional computer systems, and, as discussed above, teach generation of a score. Thus, we agree with Petitioner that it would be

a simple "substitution of one known element for another to obtain a predictable and improved result" (Pet. 30) to send the score to the teeing area, as taught by Foley, rather than the clubhouse, as taught by Bertoncino, in order for the golfer to obtain a more real-time analysis of his or her score.

c. "(b) providing each golf ball with an identifying characteristic which makes it possible to determine from which tee the golf ball originated"

Petitioner contends that Bertoncino teaches this limitation, teaching specifically that each golfer is given a bucket of balls with a unique bar code to allow the system to determine from which tee the ball was hit. Pet. 30–33 (citing Ex. 1004, 1:66–2:10, 3:26–28; 4:30–63, 5:4–9, 5:17–23, 9:1–11, 9:63–10:5; Ex. 1003 ¶ 69).

We agree, and find that Bertoncino teaches this limitation. For example, Figures 1A through 1C of Bertoncino show golf balls labeled with a universal product code. Ex. 1004, 3:63–4:3. According to Bertoncino, an optical scanner can read the code on the ball. *Id.* at 4:32–38. The balls captured by each target are identified, allowing for the calculation and scoring of statistics for a particular golfer. *Id*. at 3:28–33; *see also id.* at 4:60–63 (stating that each golfer is given a container containing a predetermined number of coded balls); *see also id.* at 9:7–11 (noting that "the computer at all times keeps track of each coded ball in the system, which is necessary in order for it to be able to identify a ball passing through a given cup or hole in a target, assign a score to it, and record the score as belonging to a given player").

Bertoncino teaches also that an attendant will assign a tee stand and provide a container of golf balls to each golfer. *Id.* at 9:32–35. The attendant feeds the container number into the computer, which triggers the

identification of all the balls in the container, as well as the tee stand assigned to the golfer. *Id.* at 9:35–41. Thus, the universal product code then can be associated with the tee stand used by any particular golfer.

d. "(c) striking one of said golf balls at one of the plurality of golfing tees"

Petitioner points to Figure 5 of Bertoncino to meet this limitation, which shows a golfer striking a ball from a tee. Pet. 33–34.

We agree with Petitioner, and find that Bertoncino teaches this limitation of claim 1. Bertoncino teaches a "golf range comprising a series of independent targets, each of which consists of a sloped area located at a different distance from a multiplicity of tee stands." Ex. 1004, Abstract. Figure 5 of Bertoncino shows a golfer striking a ball from one of those tee stands.

e. "(d) providing a plurality of target greens which are remotely located from the plurality of golfing tees"

To meet this limitation, Petitioner notes that Bertoncino teaches a plurality of target greens at a distance from the tee stands, as shown in Figures 2 and 5. Pet. 34 (citing Ex. 1004, 1:66–2:3, 3:20–25; Ex. 1003 ¶¶ 39, 72). Petitioner notes further that Foley also teaches a plurality of target greens at a distance from the tee stands. *Id.* (citing Ex. 1006, 2:4–12, 5:6–21; Ex. 1003 ¶ 72).

Patent Owner responds that Bertoncino does not teach or suggest "providing a plurality of target greens which are remotely located from the plurality of golfing tees" as that claim term should be construed. PO Resp. 6–15. That is, Patent Owner asserts, "Bertoncino does not disclose providing a plurality of target greens at realistic distances from the tee so as

to enable a golfer to practice driving skills at realistic distances." *Id.* at 6 (emphasis removed).

Specifically, Patent Owner argues that Bertoncino teaches that the farthest green is 200 yards from the teeing area. *Id.* at 7 (citing Ex. 1004, 10:46). According to Patent Owner, the ordinary artisan would understand that is not at a distance that is realistic to allow players to practice their driving skills at a realistic distance, as the typical practice range is 350 to 400 yards long, and even recreational golfers are known to drive the ball over 300 yards. *Id.* (citing Ex. 2011, 222:11–15, 18:22–19:4, 12:6–9; Ex. 2012 ¶¶ 14, 21; Ex. 2013 ¶ 12).

Petitioner responds that "Bertoncino discloses target greens that would allow a golfer to practice his golfing skills." Reply 4 (citing Ex. 1004, 1:66–2:3, 3:20–26, Figs. 2, 5; Ex. 1003 ¶ 72). We agree. That is, as discussed above, we decline to construe "providing a plurality of target greens which are remotely located from the plurality of golfing tees" as "providing a plurality of target greens at realistic distances so as to enable a golfer to practice driving skills." *See supra* Section II.A. Rather, the target greens required by the claimed method of playing a point-scoring game at a golfing range may be at a distance that allows the golfer to practice golfing skills, and may be used with any club, such as a wedge, iron, or driver. In addition, to the extent that claims encompass the use of the driver, there is nothing in the claim that requires the target green to be at the farthest possible driving distance, but would encompass the use of greens to practice driving skills at any driving distance.

As noted by Petitioner (Pet. 34), both Bertoncino (*see, e.g.*, Ex. 1004, Figs. 2, 5) and Foley (*see, e.g.*, Ex. 1006, Fig. 1, 2:4–12) teach target greens

at a distance from the tee stand, that allow a golfer to practice golfing skills, which include using any club, such as a wedge, iron, or driver, at a realistic distance from the tees. Thus, we find that both Bertoncino and Foley teach this limitation. *See KSR*, 550 U.S. at 419 ("What matters is the objective reach of the claim. If the claim extends to what is obvious, it is invalid under § 103.").

Moreover, Petitioner asserts, even under Patent Owner's proposed construction, Bertoncino teaches this limitation. Reply 4. Specifically, Petitioner notes that Patent Owner acknowledges that "Bertoncino discloses placing its circular target greens 'at 200 yards' or less (*e.g.*, 150 yards) from the tee." *Id.* (citing PO Resp. 7; Ex. 1004, 10:46). According to Petitioner, as noted by Patent Owner's experts, many golfers drive the ball 200 yards or less, with "the average driving distances in the 1990s [being] 199 yards for men and 131 yards for women, and more recent statistics still show a significant percentage of golfers with driving distances under 200 yards." *Id.* at 4–5 (citing Ex. 1011, 21:8–26:1, 68:21–24; Ex. 1010, 51:20–52:15; Ex. 1012, 2–3; Ex. 1013, 30). Petitioner asserts that "Patent Owner's expert admitted Bertoncino's target greens would be 'remotely located' from the tee for these golfers." *Id.* at 5 (citing Ex. 1010, 55:5–8).

We agree with Petitioner that even under Patent Owner's proposed construction, Bertoncino and Foley teach this limitation. For example, Bertoncino teaches a driving and/or chipping range that allows golfers "an opportunity to improve their distance and directional skills for driving and/or chipping." Ex. 1004, 1:10–16. According to Bertoncino, the "range configuration and automated system enables the golfer to practice driver and chip shots in various directions while still being able to have an accurate

measure of the length of his shots." *Id.* at 3:40–43. As noted by Petitioner Reply 5), Bertoncino specifically teaches 5 foot targets at a distance of 100, 150, and 200 yards, wherein the point score the golfer receives is based on the distance reached and the size of the target. Ex. 1004, 10:46–47. As Patent Owner's expert, Mr. Hudzan, agreed, in the 1990's, which is the time of invention of the '389 patent, 199 yards was a realistic driving distance for the average male golfer, and 131 yards was a realistic distance for the average female golfer. Ex. 1010, 51:24–52:15. In that regard, as we note above, there is nothing that limits the claim to a particular distance, or a particular driving distance. A realistic distance for practicing driving skills encompasses shorter driver shots, and is not limited to practicing driver shots at only the farthest possible distance. Thus, we find that the driving range of Bertoncino allows for practicing driver shots as well as practicing precision by teaching 5 foot targets at a distance of 100, 150, and 200 yards. *See* Ex. 1004, 10:46–47.

We note further that Foley also teaches a driving range, which includes separate golf greens "positioned within golf club driving distances from the golf driving tee area." Ex. 1006, 2:7–10. Thus, Foley is additional evidence that it was known in the art to place target greens within golf club driving distance of the tees.

Patent Owner argues further that the ordinary artisan "would interpret Bertoncino's circular targets as too small for the golfer to hit using a driver at long distances, which would explain Bertoncino's switch from circular targets to vertical targets for driver shots." PO Resp. 7. Moreover, Patent Owner asserts, the ordinary artisan would not have replaced the vertical targets of Bertoncino with the circular targets taught by that patent, as

Bertoncino teaches away from that modification. *Id.* at 8 (citing Ex. 2011, 222:16–223:7; Ex. 2012 ¶¶ 23–30; Ex. 2013 ¶¶ 12–14).

Initially, as noted above, a realistic distance for practicing driving skills encompasses shorter driver shots, and is not limited to practicing driver shots at the farthest possible distance. Moreover, Bertoncino specifically teaches the use of both 5 foot target green as well as 15 foot target green at distances of 100, 150, and 200 yards from the tees, with the smaller targets receiving higher scores than the larger targets. Ex. 1004, 10:43–49. Given Bertoncino's specific teaching of placing a 5 foot target green 200 yards from the tee area, we find that the ordinary artisan at the time of invention would not interpret Bertoncino as teaching that its circular targets are too small to hit using a driver.

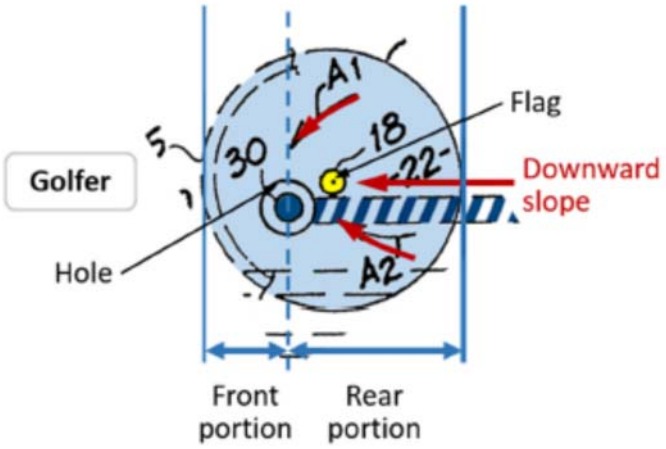
Thus, Patent Owner's arguments do not persuade us that Petitioner has not demonstrated by a preponderance of the evidence that Bertoncino does not teach or suggest "a plurality of target greens which are remotely located from the plurality of golfing tees."

> *f. "each target green having a front portion and a rear portion, providing each target green with a receptacle hole and sloping the surface of each target green in a manner to cause said golf ball, once it lands upon the target green, to roll into said receptacle hole"*

According to Petitioner, Bertoncino teaches this limitation. Specifically, Petitioner asserts that "Bertoncino discloses that each target green has a front portion, a rear portion, and a hole, and it discloses that each target green's surface is sloped to cause a golf ball that lands on the green to roll into the hole." Pet. 34–35 (citing Ex. 1004, 5:37–39, 5:53–60, 6:3–11, Figs. 3, 4, 5; Ex. 1003 ¶¶ 73–74). Citing Figure 3 of Bertoncino, Petitioner asserts that Bertoncino teaches a target green that includes three different

concentric sections (22, 24, and 26), each of which has a hole 30, noting that Bertoncino teaches also that the target green may be a single section 22 with a cup 30 at its lowest point. *Id.* at 35 (citing Ex. 1004, 5:44–66, 6:61–65).

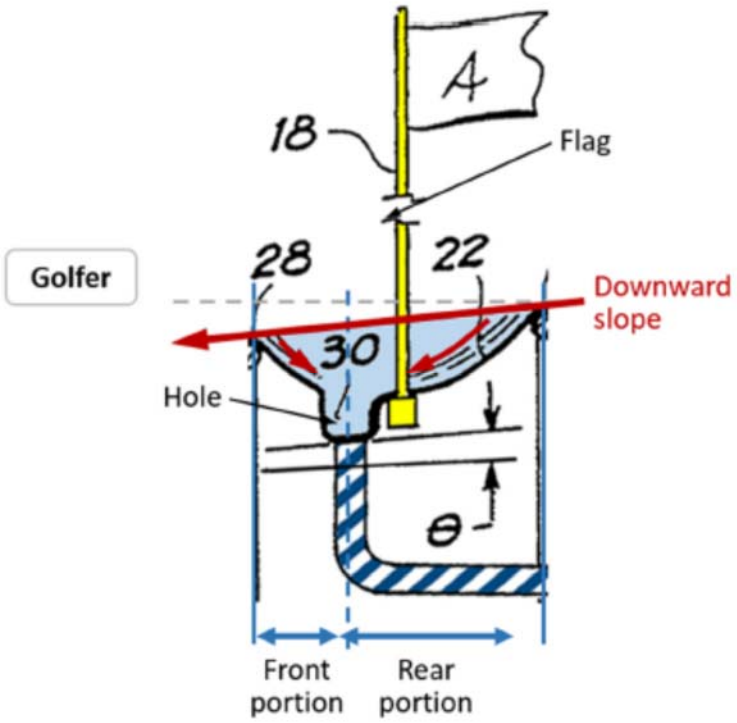
Petitioner provides the following annotated figure (hereinafter, "annotated Figure 3"):



Pet. 36 (citing Ex. 1003 ¶ 76; Ex. 1004, Fig. 3). Figure 3 of Bertoncino, from which the annotated figure above was adapted, shows a plan view of a sloped, circular target. Ex. 1004, 4:6–7. According to Petitioner, the ordinary artisan would understand that the above annotated figure is consistent with Figure 3 of Bertoncino and its disclosure that the target green may include a single section 22, and exclude outer concentric sections 22, 24. Pet. 35–36. Petitioner asserts further Bertoncino discloses also that the surface of the green 22 is sloped such that any ball that lands on it will roll into the hole 30 by force of gravity. *Id.* at 36–37 (citing Ex. 1004, 5:52–60, 6:3–11, 6:16–23).

Citing Figures 4 and 5 of Bertoncino, as well as Bertoncino's disclosure that the target green may include a single section 22 (*id.* at 37–39,

42–43), Petitioner provides the following annotated Figure based on Figures 4 and 5 (hereinafter, "annotated Figure 4"):



Pet. 39 (citing Ex. 1003 ¶ 78). Figure 4 of Bertoncino is a cross-sectional view of the sloped circular target of Figure 3. Ex. 1004, 4:8–9. Figure 5 of Bertoncino, discussed above, shows a perspective view of the sloped driving range disclosed by that reference. *Id.* at 4:12–13. According to Petitioner, the ordinary artisan would understand that annotated Figure 4 represents single section 22 having the slope profile of Figure 5, which shows that each of the target greens is sloped such that the rearmost end is greatest in elevation. Pet. 38, 42. The above annotated Figure 4, Petitioner asserts, further illustrates that the target green is sloped so that the ball will roll into the hole by force of gravity if hit anywhere into the target green 22. *Id.* at 39.

We agree with Petitioner, and find that Bertoncino teaches this claim limitation. In particular, as shown by Petitioner's annotated version of Figure 3 of Bertoncino, the targets of Bertoncino have a front portion and rear portion. That is reinforced by Figure 4 of Bertoncino, wherein the portion in front of the hole of innermost section is the front portion, and the portion behind the hole is the back portion. In addition, Bertoncino specifically teaches that the inner section 22 preferably comprises a concave structure, and a receiving cup 30 is located at the lowest spot in the section, which ensures that any ball that is hit into the section will roll into the cup 30 by the force of gravity. Ex. 1004, 5:54–60.

g. "said sloped surface forming an asymmetrical concave shape, said sloped surface having said receptacle hole located at its lowest point, said sloped surface having a profile, as viewed from the side of said target green, which is greatest in elevation at it rearmost end located at the rear portion of the target green furthest from said golfing tees"

Petitioner asserts that as Bertoncino teaches that the target green may be a single section 22, as discussed above, and shown in annotated Figure 4, Bertoncino teaches this limitation. Pet. 40 (citing Ex. 1004, 6:61–65).

> Thus, Petitioner argues, Bertoncino expressly teaches that
>
> inner section 22 preferably comprises a concave structure with an upper rim 28 defining its perimeter and boundary with the intermediate section 24. A receiving cup 30 is located next to the flag 18 at the lowest spot in the section, thus ensuring that any ball lying on the inner section 22 would roll into the cup by the force of gravity.

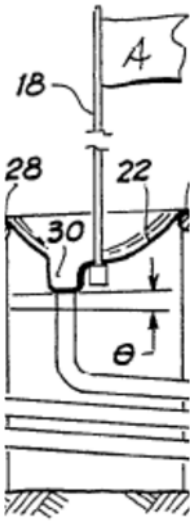
Id. at 40–41 (quoting Ex. 1004, 5:53–60). Petitioner contends, as discussed above in the discussion of annotated Figure 4, as shown in Figure 5 and as discussed by Bertoncino, the target green is sloped such that the rearmost

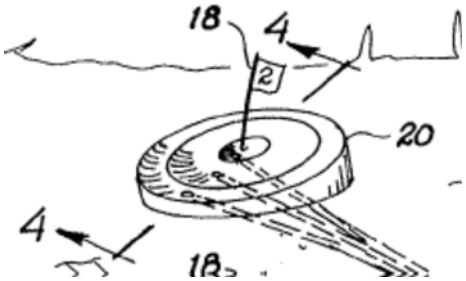
end is greatest in elevation. *Id.* at 42–43 (citing Ex. 1004, Fig. 5, 5:37–39; Ex. 1003 ¶¶ 74, 81–83).

Petitioner argues further that "[t]o the extent Bertoncino does not disclose a stand-alone target having an asymmetric concave shape that meets the claim limitations, such a green would be obvious to a skilled artisan based on Bertoncino's disclosures and the skilled artisan's general knowledge." *Id.* at 43 (citing Ex. 1003 ¶ 84). As Bertoncino teaches that the target green may only have section 22, Petitioner asserts that the ordinary artisan would have a reason "to follow Bertoncino's teachings and use the shape in section 22 for the slope of the entire target green to help the golf better visualize the green and see where his shot landed, while also ensuring that the ball rolls into the hole so it can be collected, sensed, and scored." *Id.* at 43–44 (citing Ex. 1003 ¶ 84; Ex. 1004, 1:26–30).

We find that Bertoncino teaches this claim limitation, and conclude further that to the extent Bertoncino does not specifically teach this limitation, it renders it obvious. As noted by Petitioner, Bertoncino teaches that the target green may be a single section 22. Ex. 1004, 6:62–65. The

innermost section of Figure 4 is reproduced below, as well as a target green from Figure 5:





The first graphic, to the left, is an excerpt of Figure 4, which shows a cross-sectional view of the sloped circular target shown in Figure 3, taken along line 4-4 in Figure 5. *Id.* at 4:8–9. The second graphic, to the right, shows a target green from Figure 5, which is "a schematic perspective of a sloped driving range" according to Bertoncino. *Id.* at 4:12–13. As can be seen in the excerpt from Figure 4 of Bertoncino, above (left), the sloped surface forms an asymmetrical concave shape, said sloped surface having said receptacle hole located at its lowest point. In addition, as shown in the excerpt from Figure 4, the sloped surface has a profile, as viewed from the side of said target green that is greatest in elevation at its rearmost end located at the rear portion of the target green furthest from said golfing tees. That is shown more clearly in the excerpt from Figure 5, above (right) wherein the backend of the target is greater in elevation than the front end.

Moreover, even assuming *arguendo* that the ordinary artisan would find Figure 4 and Figure 5 of Bertoncino to be inconsistent, as argued by Patent Owner (PO Resp. 48–49) below with respect to "significantly lower" claim limitation, Figure 5 would suggest to an ordinary artisan a target wherein the backend of the target is greater in elevation than the front end. That is supported by the disclosure of Bertoncino, which teaches "a golf range comprising a series of independent targets, each of which consists of a sloped area located at a different distance from a multiplicity of tee stands." Ex. 1004, Abstract; *see also id.* at 5:37-39 ("Each target 20 preferably comprises a surface generally sloped toward the tee stands area."); Ex. 1003 ¶ 81 (noting that "[a]s Bertoncino discloses that the target green is generally sloped toward the tee stands, a person of skill in the art would interpret this to mean that the rear portion of the target green is greater in elevation than the front portion closest to the tee stands.").

h. "said profile continuously sloping downward toward the front portion of the target green nearest to said golfing tees, until arriving at said receptacle hole, said downward slope travelling substantially more than one-half the distance between the front and rear portions of the target green"

In asserting that Bertoncino teaches this limitation, Petitioner reiterates that Bertoncino teaches that the target green may only have single section 22. Pet. 44 (citing Ex. 1004, 6:61–65). In particular, Petitioner relies on Figure 4 as well as annotated Figure 4 as showing that the hole 30 is closer to the front portion than the rear portion, and that the "downward slope travels substantially more than half the distance from the front to the rear portions of the target green." *Id.* at 45–46 (citing Ex. 1004, Fig. 4, 5:37–39, 5:64–6:1; Ex. 1003 ¶¶ 87–88).

Petitioner argues that to the extent that Bertoncino does not explicitly teach this limitation, it would have been obvious over the teachings of Bertoncino to use the shape in section 22 for the slope of the entire green to help the golfer better visualize the green and see where his shot lands. *Id.* at 46–47 (citing Ex. 1003 ¶ 90).

We agree with Petitioner, and find that Bertoncino teaches this claim limitation, and conclude further that to the extent Bertoncino does not specifically teach this limitation, it renders it obvious. As seen above in the excerpted portion of Figure 4 showing only innermost section 22, the profile of the target continuously slopes downward towards the front portion nearest to the golfing tees until meeting receptacle hole. In addition, that rearward portion of the target that slopes downward is substantially more than one-half the distance between the front and rear portions of the target green. *See In re Meng*, 492 F.2d 843, 847 (CCPA 1974) (noting that "a drawing is available as a reference for all that it teaches a person of ordinary skill in the art").

> *i. "said profile, as it continues forward from said receptacle hole, continuously sloping upward toward the front portion of the target green, said profile's forward most end located at the forward portion of the target green having an elevation that is significantly lower than at its rearmost end, said upward slope travelling substantially less than one-half the distance between the front and rear portions of the target green"*

In contending that Bertoncino teaches this limitation, Petitioner notes again that Bertoncino teaches that the target green may have only single section 22. *Id.* at 47. Petitioner argues that Figure 5 of Bertoncino shows that the target green has a rear portion that is significantly higher than the front, which allows the golfer to easily see where the ball lands on the green.

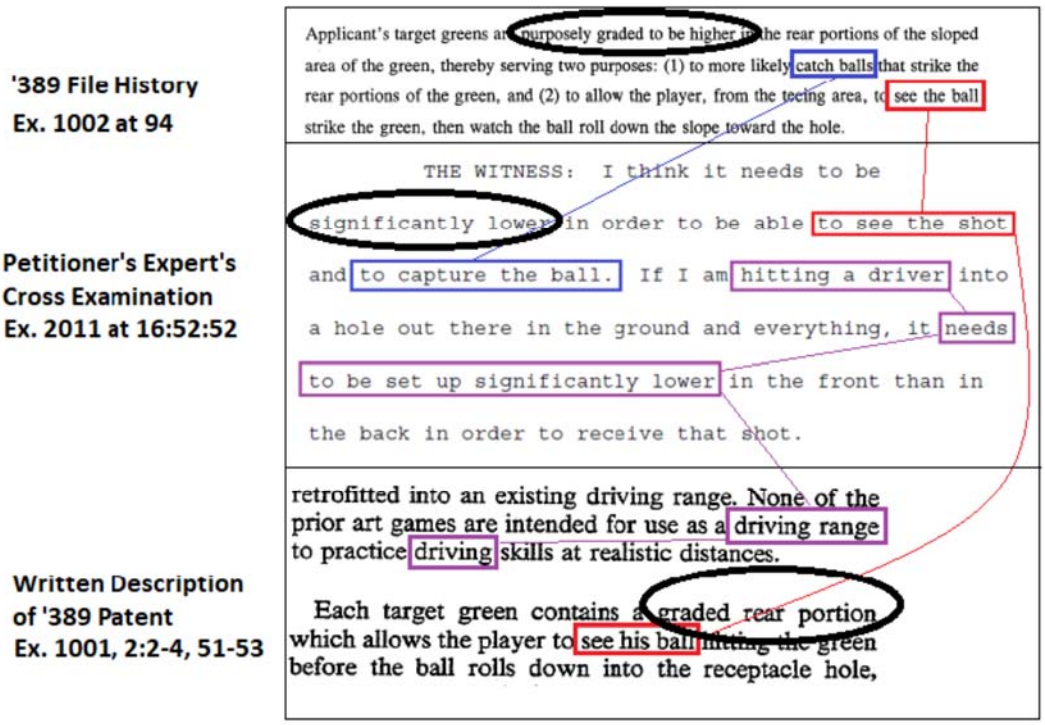
Id. at 49–50 (citing Ex. 1004, Fig. 5, 1:26–30, 5:37–39, 5:53–60, 6:21–32; Ex. 1003 ¶¶ 43, 91, 90, 93).

Petitioner asserts further that to the extent that Bertoncino does not expressly teach this limitation, it renders it obvious. *Id.* at 50 (citing Ex. 1003 ¶ 94). In particular, Petitioner argues that Petitioner would have a reason to use the shape in section 22 for the slope of the entire green to help the golfer better visualize the green and see where his shot had landed, and also allow the ball to roll into the hole, where it can be sensed, selected, and scored. *Id.* (citing Ex. 1004, Figs. 4, 5, 5:47–6:15, 6:61–65; Ex. 1003 ¶ 94).

Patent Owner contends that Bertoncino does not teach or suggest the limitation of claim 1 that the (emphasis added) "forward most end located at the forward portion of the target green ha[s] an elevation that is *significantly lower* than at its rearmost end." PO Resp. 15–67.

In particular, Patent Owner contends that the "significantly lower" limitation should be construed functionally, that is, as allowing the player to see the shot, as well as enabling the target green to catch the ball. *Id.* at 15 (citing Ex. 1001,[4] 2:51–54; Ex. 1002, 93; Ex. 2011, 220:16–21; Ex. 2012 ¶¶ 16–22; Ex. 2013 ¶ 15). According to Patent Owner, that construction is supported by the intrinsic record, as shown in the following graphic offered by Patent Owner:

[4] Patent Owner uses an "*id.*" cite, but the previous citation, Ex. 2013, lists paragraph numbers. We assume Patent Owner meant to cite the challenged patent.



PO Resp. 15–16.

Patent Owner argues, therefore, that "[t]he specific elevation difference to build into a target green depends on how far it is from the tee." PO Resp. 17. That is, Patent Owner asserts, because the distance will determine the "expected angle of approach of the ball," as well as its velocity, the elevation difference would "be a function of experimentation and trial and error in the real world." *Id.*

According to Patent Owner, "[t]he significantly lower elevation difference is critical for catching or capturing balls struck using driver shots, which is the key shortcoming of the prior art that this claimed invention overcame." *Id.* Patent Owner further relies on the testimony of Petitioner's expert, Mr. Robbins (Ex. 2011, 70:3–12, 73:18–23, 183:13–20, 220:16–21, 231:20–232:1) to support that assertion, as well as the testimony of Patent Owner's experts (Ex. 2012 ¶¶ 16–22, 65; Ex. 2013 ¶ 15). *Id.* at 17–19.

Petitioner responds that "the ordinary meaning of 'significant' imposes no rigid cut-off: it means 'important,' 'of consequence,' 'fairly large,' or 'substantial.'" Reply 5 (citing Ex. 1009, 1246; Ex. 1014, 761). Petitioner asserts that "significantly lower" is a relative term that is not defined by the specification of the '389 patent. *Id.* at 6. Petitioner agrees with our determination in our Decision Denying Patent Owner's Request for Rehearing that the only guidance provided in the specification is that "the target green is 'sloped downhill' and has 'a sudden drop off near the front portion of the green, and then a gradual slope upwardly toward the back of the green,'" consistent with Figure 4C of the '389 patent. *Id.* (citing Ex. 1001, 4:29–46).

As to Patent Owner's proposed construction of "significantly lower" as requiring the player to see the shot and enabling the target green to capture the ball, Petitioner asserts that Patent Owner relies on parts of the prosecution history to read in those requirements. *Id.* at 7. But Petitioner avers that the statement on which Patent Owner relies was made during a time in which the "significantly lower" limitation had not yet been added to the claims. *Id.* (citing Ex. 1002, 91–94, 101). Moreover, Petitioner argues, the statements made during prosecution did not disclaim or limit the claim slope, as they merely state that "the "purpose' of sloping the green is to increase visibility and make it 'more likely' that the green catches a ball that strikes the rear portion, but that doesn't exclude greens that fail to meet those characteristics." *Id.* In addition, the specification only mentions a "graded rear portion" that "allows the player to see his ball hitting the green," but, Petitioner argues, that is only a potential benefit and not a disclaimer. *Id.* (citing Ex. 1001, 2:51–55).

We determined in our Decision on Institution that none of the claim terms required express construction. Dec. Inst. 7. In our Decision Denying Patent Owner's Request for Rehearing, we noted that the specification of the '389 patent does not define the relative term "significantly lower." Paper 14, 10. In fact, the specification does not even use the term "significantly lower." *See* Tr. 6:16–18 (Petitioner's counsel noting that the specification "never uses the term significantly lower), 23:1–3 (Patent Owner noting that "[s]ignificantly lower is a purposely vague term inserted in the patent claim because the patent law does not require mathematical precisions"). Relying on Figure 4C of the '389 patent, we noted in our Decision Denying Rehearing:

> As taught by the '389 patent, "[t]arget green 30 would appear to the golfer at the teeing area to have a sudden drop off near the front portion of the green, and then a gradual slope upwardly toward the back of the green." [Ex. 1001,] 4:37–40. Thus, at best, the Specification of the '389 patent appears to support a construction of the claim limitation of a target green profile whose "forward most end located at the forward portion of the target green ha[s] an elevation that is *significantly lower* than at its rearmost end" as a green that has a sudden drop off near the front portion of the green and then a gradual slope upward toward the back of the green.

Paper 14, 11.

Patent Owner argues that the construction of "significantly lower" set forth in the Decision Denying Rehearing is incorrect, arguing that we did not treat it "as the term of degree that it is," and that we did not "define claim scope in terms of objective criteria from the intrinsic record." PO Resp. 19 (citing Paper 14); *see also id.* at 19–26 (arguing that neither the intrinsic nor the extrinsic record supports the purported construction of "significantly lower" in the Decision Denying Rehearing). We determine that we need not

specifically construe "significantly lower" as even under Patent Owner's proposed construction, for the reasons discussed above and below, Petitioner has demonstrated by a preponderance of the evidence that claim 1 is rendered obvious by the combination of Bertoncino and Foley.

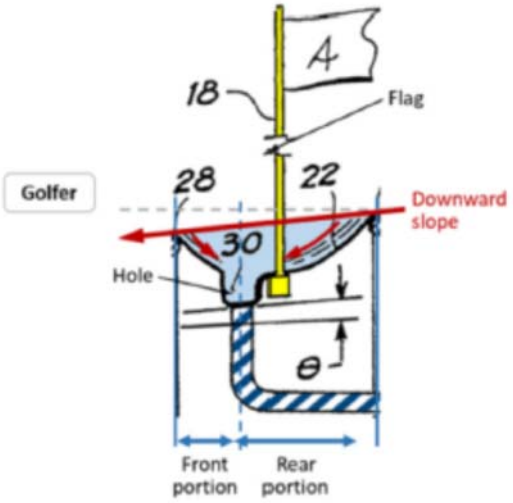
Patent Owner asserts next that the combination of Bertoncino and Foley does not teach the "significantly lower" limitation under Patent Owner's proposed construction. PO Resp. 26.

Patent Owner contends that Figure 4 of Bertoncino, relied upon by Petitioner, does not show a target green in which the foremost end is significantly lower than the rearmost end. *Id.* In making that contention, Patent Owner relies on the testimony of Petitioner's declarant, Mr. Robbins, asserting that Mr. Robbins stated that his "testimony is that . . . it is *somewhat* lower on this drawing . . . It doesn't show it much lower in Figure 4 . . . [i]t shows some elevation difference. It does not show as much as Figure 5." *Id.* (quoting Ex. 2011, 91:5–7, 219:7–11). Patent Owner argues further that Mr. Robbins testified that Figure 4 was not meant to show slope, and is very different from Figure 5. *Id.* at 28 (citing Ex. 2011, 179:16–21). Thus, Patent Owner argues that Mr. Robbins's testimony does not support a finding that Figure 4 of Bertoncino shows a target green in which the foremost end is significantly lower than the rearmost end. *Id.*

According to Patent Owner, Mr. Robbins testified further that his annotation of Figure 4 was not meant to show slope, but only that there was a downward slope toward the tee. *Id.* at 29 (citing Ex. 2011, 182:5–13). Patent Owner argues that Mr. Robbins testified that the drawing was meant to demonstrate that "Bertoncino calls for sloping greens and he calls for the same criteria of [1] visibility and [2] capturing the ball that [the '389 patent]

calls for and [3] rolling into the hole with gravity." *Id.* at 30 (citing Ex. 2011, 182:20–24). Despite that testimony, Patent Owner avers, Mr. Robbins "testified that the drawing shows that such target greens meets *every limitation* of Claim 1." *Id.* at 29.

Petitioner responds that Bertoncino teaches or suggests the "significantly lower" limitation. Reply 8. Petitioner notes that Bertoncino teaches that the "target greens 'preferably' have 'a surface generally sloped toward the tee' and refers to them as 'sloped targets.'" *Id.* (citing Ex. 1004, 5:37–39, 7:47, Abstract). Petitioner asserts further that the target greens as shown in Figure 5 have an elevation difference similar to those as shown by Figure 4C of the challenged '389 patent. *Id.* As Bertoncino teaches that the target greens may have a single section 22, Petitioner asserts that the ordinary artisan "would interpret Bertoncino to disclose that such target greens would have the same downward slope and elevation difference shown in Figure 5, like the figure shown below", that is, annotated Figure 4:



Id. at 8–9 (citing Ex. 1004, 6:61–65; Ex. 1003 ¶ 92). Annotated Figure 4, reproduced above is an annotated and edited version of Figure 4 of

Bertoncino, which is a cross-sectional view of one of the target green of Figure 5 taken along line 4-4. Ex. 1004, 4:8–9.

According to Petitioner, Patent Owner's expert, Mr. Hudzan, "admitted that Bertoncino teaches a target green with a single section 22 would have the same slope as a target green with multiple sections." Reply 9 (citing Ex. 1010, 73:14–21). Petitioner further asserts that its expert, Mr. Robbins, testified that Bertoncino teaches target greens with single section 22 that is significantly lower in the front than the back, which is consistent with comparing Figure 4C of the '389 patent to Figure 5 of Bertoncino. *Id.* (citing Ex. 1003 ¶¶ 43, 91–93; Ex. 2011, 88:9–15, 187:7–188:25, 191:7–18, 217:25–218:6). Petitioner contends further that Patent Owner's expert, Mr. Hurdzan, "admitted that if the prior art showed a target green with the same elevation difference as the '389 patent's Figure 4C, it discloses the 'significantly lower' limitation." *Id.* (citing Ex. 1010, 58:1–6).

Petitioner contends also that Mr. Robbins "explained that target greens with the elevation difference shown in Bertoncino's Figure 5 meet both of Patent Owner's additional limitations—the slope created by this elevation difference (1) 'allows the golfer to see the target green' and (2) 'reduces the likelihood that a ball landing on the rear portion of the green will bounce off.'" *Id.* at 11 (citing Ex. 1003 ¶¶ 91, 43; Ex. 2011, 68:8–16, 69:14–22, 73:7–23, 103:8–10, 105:3–8, 182:15–24, 187:8–12, 216:5–217:2). Moreover, Petitioner contends that testimony is consistent with the teaching of Bertoncino, as Figure 5 of Bertoncino shows target greens that are visible to the golfer, and Bertoncino states that "'the slope of the target' is part of what 'causes any coded ball hit by a user and coming to lie at any point within the inner section to be moved by gravity into the cup.'" *Id.* (citing

Ex. 1004, 6:3–11). According to Petitioner, Mr. Bertoncino, another of Patent Owner's experts, "admitted that a target green with the elevation difference shown in the '389 patent's Figure 4C would make it (1) easier for the golfer to see the ball strike the green and (2) easier for the green to catch the ball." *Id.* at 10–11 (citing Ex. 1011, 29:14–20).

As to Patent Owner's criticisms of Figure 4 of Bertoncino as modified and annotated by Mr. Robbins (Ex. 1003 ¶ 92), Petitioner responds that those are "largely irrelevant," as Figure 5 of Bertoncino demonstrates that the "significantly lower" limitation is met. Reply 12. Moreover, Mr. Hurdzan, Patent Owner's expert, admits, Petitioner argues, "that Bertoncino discloses a target green with a single section 22 that is sloped toward the tees," and Figure 5 of Bertoncino shows the slope of the target green. *Id.* (citing Ex. 1010, 73:18–21).

We find that Petitioner demonstrates by a preponderance of the evidence that Bertoncino teaches or suggests the "significantly lower" limitation under Patent Owner's construction of "significantly lower" as allowing the player to see the shot, as well as enabling the target green to catch the ball (PO Resp. 15).

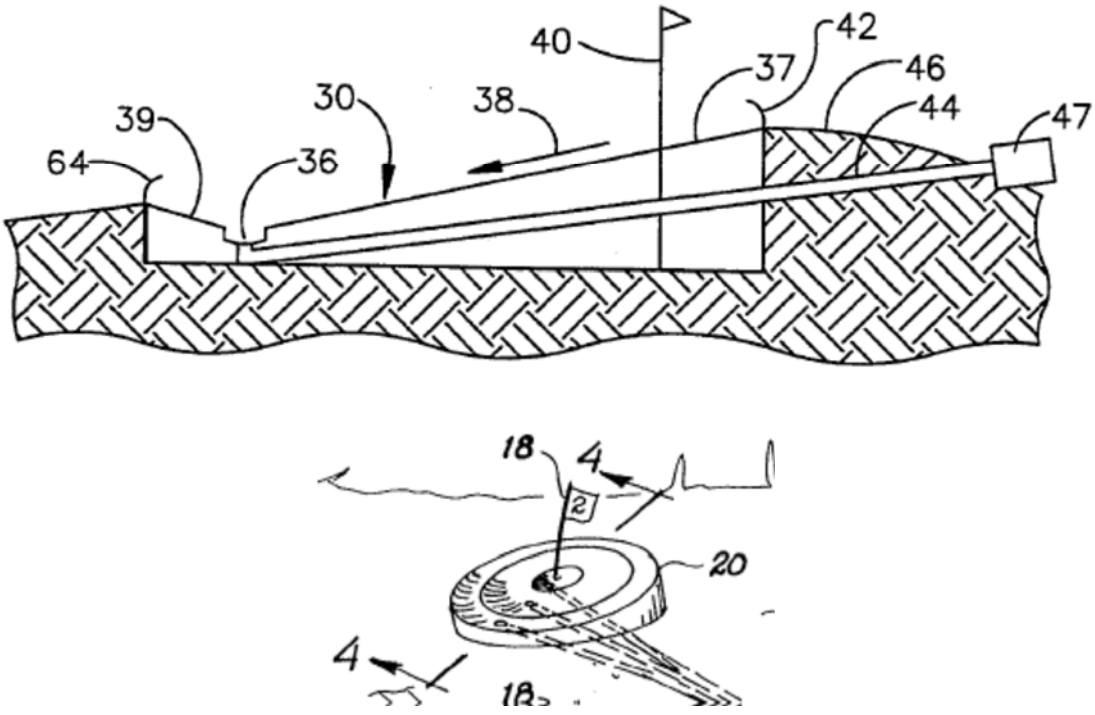
We note that, as neither party disputes, the specification of the '389 patent does not use the term "significantly lower." That is, the term "significantly lower" first appears in claim 1. Thus, the ordinary artisan would look to the drawings of the '389 patent as to the meaning of that term. Figure 4C of the '389 patent is the only figure that shows an elevation difference between the foremost end of the target and the rearmost end of the target.

In that regard, we note that Patent Owner's expert, Mr. Hurdzan, testified during cross-examination:

> Q. Okay. So if I find a prior art reference that shows a target green with this same elevation difference [as Figure 4C of the '389 patent], that would mean that that target green has a significantly lower front end than rear end; correct?
>
> A. Yes.

Ex. 1010, 58:1–6. Thus, Mr. Hurdzan agrees that a prior art reference that has the elevation difference between the foremost end and the rearmost end of the target green as shown in Figure 4C of the '389 patent would meet the "significantly lower" limitation as construed by Patent Owner.

We reproduce Figure 4C of the '389 patent and a target green from Figure 5 of Bertoncino below:



The top figure reproduced is Figure 4C from the challenged '389 patent, which shows "a cross-sectional view of the target green of FIG. 4B, taken along section line 4C–4C." Ex. 1001, 3:28–29. The bottom figure reproduced shows a target green from Figure 5, which is "a schematic perspective of a sloped driving range" according to Bertoncino. Ex. 1004, 4:12–13.

Comparing the elevation difference between the front end of the target and the rear end of the target as shown by the '389 patent and Bertoncino, we agree with Petitioner's expert, Mr. Robbins:

> As is evident in Bertoncino Figure 5, the target green has a forwardmost end located at the forward position (toward the golfer) substantially lower than the rearmost end. (TOP-1004 at Fig. 5.) Such a slope allows the golfer to see the target green, even if it is located at a great distance from the tee area, and reduces the likelihood that a ball landing on the rear portion of the green will bounce off.

Ex. 1003 ¶ 91. Mr. Robbins also testified during cross-examination:

> I can draw a conclusion based on the evidence that I see visually in front of me that there's a slope to the greens; and, to me, it would be significant based on that drawing [of Bertoncino] in Figure 5.

Ex. 2011, 188:22–25.

As to the ability to see the ball, as testified by Mr. Robbins during his cross-examination:

> Q. And this higher-in-the-back-to-the-front business, can you explain how that enhances visualization from the golfer's perspective?
>
> A. Absolutely. I mean from any perspective, if it's something that's tilted towards you, it's going to be more visible than something lying flat. The example I gave a while ago was a

> catcher's mitt. If I'm going to catch a ball like this, you can't do it. I've got to be like that. I can't see it otherwise either.
>
> Q. The significantly lower front end than the rear end of the green, was that all over the place in driving ranges before 1992?
>
> A. In general, yes. I mean in order to make target greens visible, you had to have a slope on it; and you are not playing on them, so they were significantly sloped and that's been that way for a long, long time.

Ex. 2011, 216:10–217:2.

That testimony by Mr. Robbins is supported by Meikle,[5,6] cited by Petitioner in its Reply as evidence as what would be understood by the ordinary artisan at the time of invention. Reply 17. Specifically, Meikle teaches that an inclined target green provides an illusion of a larger hitting surface, and allows the golfer "to directly observe where on the green his shot has landed." Ex. 1015, 2:27–30. According to Meikle, "[a]s opposed to a flat landing area, the inclined surface is easily observed from a significant distance." *Id.* at 2:30–32.

As to the ability to catch the ball, that is the purpose of the target greens taught by Bertoncino. If the target green cannot capture the ball, the ball will not enter the hole and no score can be obtained. That finding is

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[5] Meikle, U.S. Pat. No, 5,297,795, issued March 29, 1994 (Ex. 1015).

[6] We note that in a conference call after the oral hearing, Patent Owner requested a sur-reply to respond to Meikle after the oral hearing, and, in particular, be given the opportunity to swear behind that reference. Paper 36, 3. Petitioner, however, is not relying on Meikle as part of its obviousness challenge, but only as evidence as to what would have been understood by the ordinary artisan at the time of invention. *See Ariosa Diagnostics v. Verinata Health, Inc.*, 805 F. 3d 1359, 1365 (Fed. Cir. 2015) ("Art can legitimately serve to document the knowledge that skilled artisans would bring to bear in reading the prior art identified as producing obviousness.").

supported by Bertoncino, which teaches "[o]ptimally, the slope of the target and the configuration of the various surface areas within the target, preferably causes any coded ball hit by a user and coming to lie at any point in the inner section to be moved by gravity into the cup in the inner section." Ex. 1004, 6:3–8. In that regard, we note that Mr. Bertoncino, one of Patent Owner's experts, testified during cross-examination:

> Q. Would any target green with the elevation difference depicted in Figure 4C [of the '389 patent] have the benefit of enabling the target green to catch on-target trajectories?
>
> A. Well, I think, in that particular 4C, are you talking about – 4C, yes, it would make it easier to see.
>
> Q. And to catch on-target trajectories?
>
> A. Yes. To catch.

Ex. 1011, 29:14–20.

We have considered Patent Owner's arguments, but they do not persuade us that Petitioner has not demonstrated by a preponderance of the evidence that Bertoncino teaches the "significantly lower" limitation of claim 1.

In particular, we decline to focus the analysis on Figure 4 of Bertoncino to the exclusion of Figure 5 of that reference. "A reference must be considered for everything it *teaches* by way of technology and is not limited to the particular *invention* it is describing and attempting to protect." *EWP Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907 (Fed. Cir. 1985); *In re Applied Materials, Inc.*, 692 F.3d 1289, 1298 (Fed. Cir. 2012). Importantly, when evaluating claims for obviousness, "the prior art as a whole must be considered." *In re Hedges*, 783 F.2d 1038, 1041 (Fed. Cir. 1986). Moreover, Bertoncino's drawings are part of its disclosure, and we

are relying on them as to what they would suggest to the ordinary artisan. *See Meng*, 492 F.2d at 847.

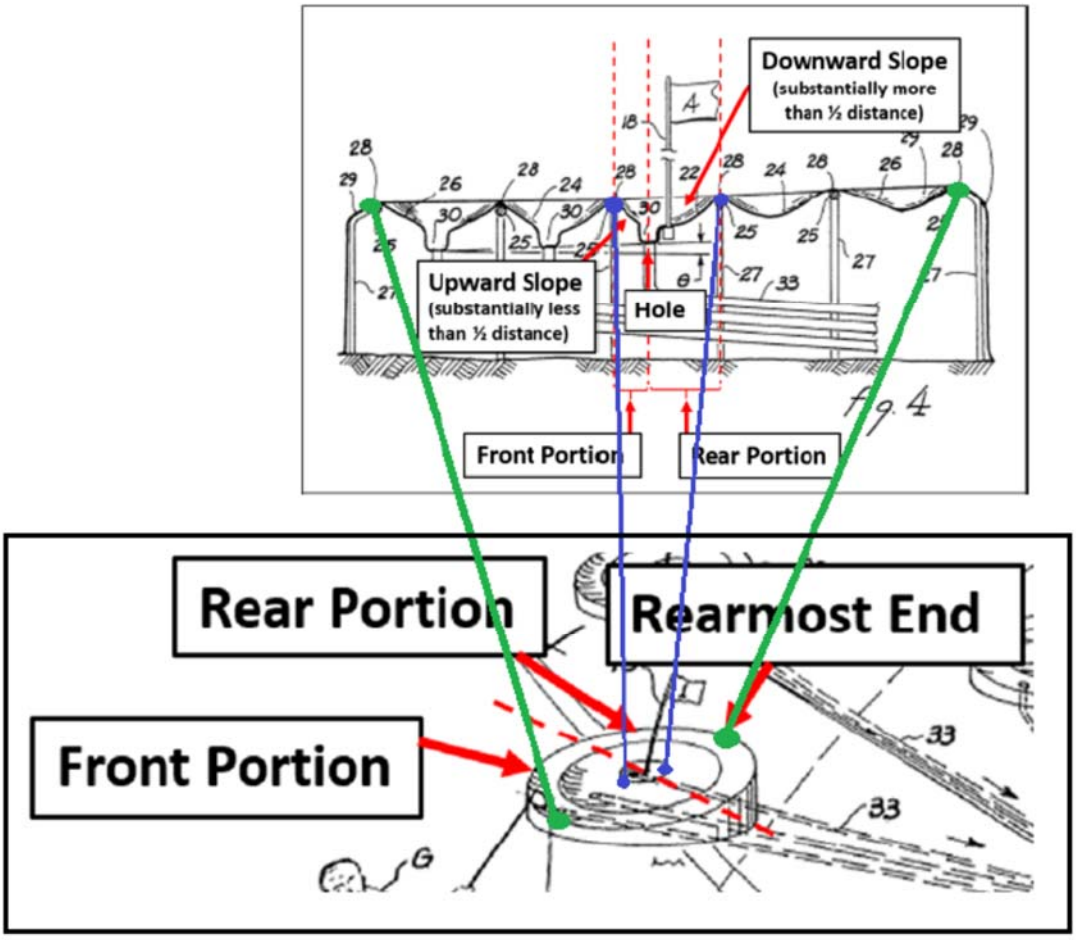
Importantly, the text of Bertoncino is consistent with the slope as shown in Figure 5. Specifically, Bertoncino teaches "[e]ach target 20 preferably comprises a surface generally sloped toward the tee stands area." Ex. 1004, 5:37–39. Bertoncino also refers to sloped sections in other portions of the patent, including stating "[e]ach cup 30 in the sloped targets 20 and each hole 50 at the lower end of the gutter in each section of the standing target 40 are connected to an inclined system of tubing for the retrieval of balls that landed within a target." *Id.* at 7:47–51; *see also id.* at Abstract ("A golf range comprising a series of independent targets, each of which consists of a sloped area located at a different distance from a multiplicity of tee stands."). As there appears to be very little to no slope in Figure 4, we find that the ordinary artisan would turn to Figure 5 as it shows a sloped target and driving range.

In that regard, we agree with Petitioner's expert, Mr. Robbins, as to Figure 4 of Bertoncino. Mr. Robbins testified during cross-examination:

> My testimony was that this drawing, I don't believe, really shows or was meant to show slope so much as it was meant to show this kind of detail, and he had to do an expanded drawing to be able to get the detail of where the flag is located, where the hole is located. It's a very different drawing than Figure 5.

Ex. 2011, 179:16–21. Mr. Robbins testimony is also consistent with Bertoncino's description of Figure 4—that is, that Figure 4 shows a cross-sectional view of the sloped circular target shown in Figure 3, "taken along line 4–4 in FIG. 5, illustrating the channel geometry and the ball-retrieval piping system associated with each section." Ex. 1004, 4:8–11.

Patent Owner contends further that Petitioner incorrectly annotates Figure 5 of Bertoncino. Patent Owners provides the following graphic:



PO Resp. 32. The upper Figure is an annotated version of Figure 4 of Bertoncino, which shows a cross-sectional view of a target green taken along line 4–4 of Figure 5, "illustrating the channel geometry and the ball-retrieval piping system associated with each section." Ex. 1004, 4:8–11. The lower Figure is an annotated portion of Figure 5 of Bertoncino showing a single target green of the driving range disclosed by Bertoncino. *Id.* at 4:12–13. According to Patent Owner, "[t]he structure in between the green endpoints is not within healing distance of the claimed invention that lies

between the claimed 'forward most' and 'rearmost' ends." PO Resp. 32–33. That is, Patent Owner argues, there are "ten alternating slopes and three receptacle holes" between the green dots, asserting further that Petitioner has not provided any evidence as to the elevation difference between the blue dots in the annotated figure reproduced above that flank only inner section 22. *Id.* at 33.

Additionally, Patent Owner asserts that Mr. Robbins testified that he did not select a point for the forwardmost point or the rearmost point of the target green of Bertoncino, and, thus, did not perform a proper *Graham* analysis. *Id.* Specifically, Patent Owner maintains that Mr. Robbins "testified that he understood 'forwardmost end' to mean one point, 'rearmost end' to mean another point, and understood the challenged claims required a comparison of the elevation at one point with the elevation at another point." *Id.* (quoting Ex. 2011, 168:15–22, 188:15–16). Despite that testimony, Patent Owner asserts, Mr. Robbins stated during his deposition that his "approach to obviousness analysis was that 'the main comparison was sloping greens; why they were sloping and what they were called for . . . I found that they did say they wanted it sloped back to front and, to me, it's significant.'" *Id.* at 33–34 (quoting Ex. 2011, 169:19–24). In fact, Patent Owner contends, when asked whether he was referring to two points on the outermost circle, the middle circle, or the innermost circle, Mr. Robbins responded that the sections are concentric, and his statements in his declaration referred to all three of them. *Id.* at 34 (citing Ex. 2011, 83:6–12 83:6–8; Ex. 1003 ¶ 91).

Patent Owner contends further that slope is not a proxy for elevation, as elevation difference is the slope multiplied by the horizontal distance. *Id.*

Mr. Robbins, Patent Owner avers, apparently agreed, as he testified that the elevation difference will differ depending on the two points you pick on a slope. *Id.* Mr. Robbins, however, Patent Owner argues, testified that he did not pick two specific points to determine the elevation difference. *Id.* Mr. Robbins testified further, Patent Owner asserts, that if he knew the slope and horizontal difference, he could determine the elevation difference, but acknowledged that he did not have that information for the target greens taught by Bertoncino. *Id.* at 34–35 (citing Ex. 2011, 174:12–174:24, 188:3–14). When then queried as to whether elevation difference could be determined without any information about the horizontal distance, Patent Owner notes that Mr. Robbins answered "I can draw a conclusion [about elevation difference] based on the evidence . . . that there's a slope to the greens; and, to me, it would be significant based on that drawing in Figure 5." *Id.* at 35 (citing Ex. 2011, 188:22–25). Patent Owner insists, however, that statement "violates formal logic," as the horizontal distance required to determine the elevation difference is underdetermined. *Id.* That is, Patent Owner asserts, Mr. Robbins did not have a sufficient amount of information to determine the elevation difference. *Id.* at 36.

Petitioner responds that its expert, Mr. Robbins, "took a consistent approach to analyzing the figure," asserting that he "did consider two points in Figure 5 when assessing the 'significantly lower' limitation—the 'very back, away from the tee, and the very front in the direction of the tee.'" Reply 12–13 (citing Ex. 2011, 76:11–16). Those two points, Petitioner asserts, are consistent with the green points in Patent Owner's annotation of Figures 4 and 5, and are also consistent with looking at "the entire picture." *Id.* at 13 (citing Ex. 2011, 166:16–19, 174:18–21). In addition, Petitioner

avers, Bertoncino teaches that innermost section 22 can make up the entire target green,[7] and, thus, the entire area between the green dots would be occupied by inner section 22, meeting all the requirements of claim 1. *Id.*

Petitioner contends further that Patent Owner's discussion of the differences between the elevation difference and slope is "irrelevant," as Mr. Robbins testified that "Bertoncino does disclose target greens that are 'significantly lower' in elevation in the front than in the back." *Id.* (citing Ex. 1003 ¶¶ 91, 93; Ex. 2011, 187:7–12, 191:7–18, 193:13–25, 210:21–24, 211:19–21). According to Petitioner, Mr. Robbins based that in part on the teaching of Bertoncino that the target greens are sloped towards the tees, and Patent Owner's expert, Mr. Bertoncino, agrees that slope is related to elevation difference. *Id.* at 13–14 (citing Ex. 1004, 5:37–39, 4:6–11, 6:3–11, 7:47, Ex. 1011, 35:19). Additionally, the challenged '389 patent does not speak in terms of elevation difference, Petitioner avers, but instead speaks to the slope of its target greens. *Id.* at 14 (citing Ex. 1001, 1:11–15, 2:37–39, 4:32–46, Abstract).

Again, Patent Owner's arguments do not persuade us that Petitioner has not met its burden of establishing that Bertoncino teaches this limitation by a preponderance of the evidence.

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[7] In a conference call after the oral hearing, Patent Owner asserted that this was a new argument made for the first time during oral hearing. Paper 36, 2. That argument, however, is found in Petitioner's Reply (Reply 13), as well as the Petition (Pet. 50 (noting that "[a] skilled artisan would be motivated to follow Bertoncino's teachings and use the shape in section 22 for the slope of the entire target green to help the golf better visualize the green and see where his shot landed, while also ensuring that the ball rolls into the hole so it can be collected, sensed, and scored")).

As to Patent Owner's argument that Petitioner incorrectly annotates Figure 5, we agree with Petitioner (Reply 13) that Bertoncino teaches that "the target 20 may comprise a single section 22 with a single cup 30 connected to the lowest point in its surface." Ex. 1004, 6:63–65. Thus, as Bertoncino teaches that the target 20 may comprise the only innermost section 22, this would suggest to the ordinary artisan that the full area between the green dots in the annotated graphic provided by Patent Owner would comprise inner section 22.

We also do not find persuasive Patent Owner's arguments that Mr. Robbins did not perform a proper *Graham* analysis because, according to Patent Owner, he did not select two discrete, specific points on the target green of Bertoncino, and that he improperly used slope as a proxy for elevation difference.

Initially, we note that Patent Owner is suggesting a precision that is not taught by the '389 patent, nor is it required by claim 1. As noted above, the specification of the '389 patent does not refer to a "significantly lower" elevation difference, and does not discuss elevation generally. Rather, similar to Bertoncino, the '389 patent discusses the slope of the target green. For example, the '389 patent teaches that "[t]he invention will be specifically disclosed in connection with such a range in which the target greens are sloped so that a golf ball landing on each green will roll into a hole containing a sensor that can identify from which tee the ball was hit." Ex. 1001, 1:11–15. Likewise, the '389 patent discloses that "[e]ach of the target greens has a concave, sloped surface which causes the ball to roll downward into a receptacle hole." *Id.* at 2:37–39.

Claim 1 also does not specify an elevation difference, only that the (emphasis added) "forward most end located at the forward portion of the target green having an elevation that is *significantly lower* than at its rearmost end." As discussed above, the only guidance in the description of the '389 patent as to the "significantly lower" limitation is Figure 4C of the '389 patent. We, therefore, do not find the fact that Mr. Robbins did not select two discrete, specific points on the target green of Bertoncino a sufficient reason to determine that Petitioner has not demonstrated that Bertoncino teaches this limitation by a preponderance of the evidence.

Additionally, we find that Mr. Robbins' analysis was sufficient given the lack of specificity in the '389 patent and the claim. Mr. Robbins testified during cross-examination:

> Q. When you read Claim 1 in the portion you have reproduced in paragraph 91, do you regard as your task when you are attempting to ascertain the difference between the prior art and the claimed invention, do you deem it your task to assess whether or not the elevation difference is significantly lower, somewhat lower, identical, higher, significantly higher or so on between two points on the profile or not?
>
> THE WITNESS: That was not part of my task that I saw as being part of what I was being asked to do. I looked at sloping greens because it was referenced in the documentation. There's a reason for sloping greens of which all three patents call for that we have been over; the visibility, catching the golf ball, the ability to make it roll downhill. All those things needed to be satisfied with the slope.
>
> How much it was, was not defined in any of the deals and it would probably vary, depending upon the distance of the green to the tee.

Ex. 2011, 167:4–23 (objection omitted).

Mr. Robbins testified further:

> Q. Well, those are the criteria, but what are you comparing to what when it comes to the phrase significantly lower? Like what two points, I mean, on the profile?
>
> A. The very back [of the target green], away from the tee and the very front [of the target green] in the direction of the tee.

Ex. 2011, 76:11–16.

We find, therefore, that comparing the front of the target green with the back of the target green, without necessarily specifically identifying a discrete point on the front of the target and a discrete point on the back of the target, is sufficiently precise to determine whether the "forward most end located at the forward portion of the target green having an elevation that is significantly lower than at its rearmost end."

We also do not disagree with Patent Owner that slope is not necessarily the same thing as a difference in elevation. The problem with Patent Owner's argument in this instance is that the '389 patent also does not define the size of its target green. The best guidance as to what the claim is referring to reciting that the "forward most end located at the forward portion of the target green having an elevation that is significantly lower than at its rearmost end" is Figure 4C of the '389 patent. And as discussed above, we agree with Petitioner that Figure 5 shows a similar difference in elevation between the front and the back, and would thus also have a significantly lower forward most end when compared to its rearmost end.

Even assuming, *arguendo*, that the size of the target is necessary to the analysis, as the '389 patent does not discuss the size of its target greens, the ordinary artisan would understand that the size is similar to that of a green on a golf course, given that the '389 patent refers to the target as a

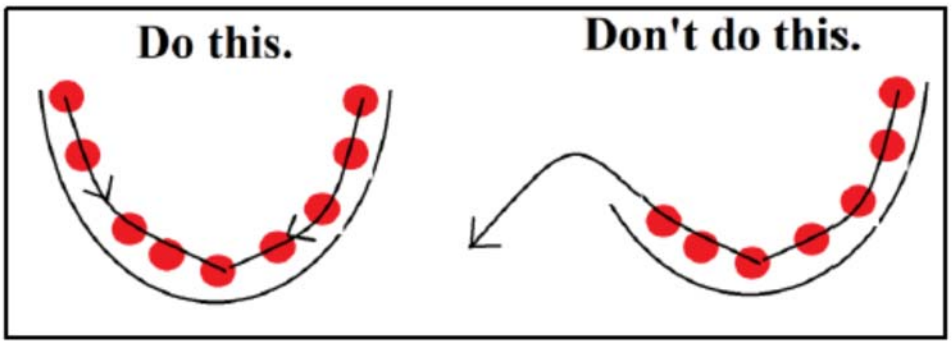
green. Bertoncino teaches that the target 20 preferable has "the general visual characteristics of a golf course green, but not necessarily as large." Ex. 1004, 5:30–32. Thus, as the size of the target green in Bertoncino may have the size as a golf course green, it would be approximately the same size as the target green taught by the '389 patent. Given that, as noted by Patent Owner, elevation difference is the slope multiplied by the horizontal distance, once the horizontal difference is determined to be approximately the same, slope does become an appropriate proxy for the elevation difference given the lack of precision required by claim 1, which uses the relative term "significantly lower."

Patent Owner argues further that Petitioner ignores the teachings of Bertoncino. PO Resp. 38. In particular, Patent Owner argues that "the only functional role of the target green slope articulated in Bertoncino—to prevent balls from getting stuck in the only two cross-sectional surface areas lacking a receptacle hole—outer sections 24 and 26." *Id.* (citing Ex. 1004, 6:3–11). That is, Patent Owner asserts, "Bertoncino states, 'Optimally, [due to] the slope of the target and the configuration of the various surface areas within the target . . . any coded ball coming to lie at any point within either annular section will be moved by gravity to the lowermost part of the corresponding channel and then to the cup in that section.'" *Id.* at 39 (quoting Ex. 1004, 6:3–11) (alterations original). Patent Owner contends that need for a slope is not required by the innermost circle as it has a hole at its center. *Id.* at 39–40.

Bertoncino has another design consideration, Patent Owner avers. PO Resp. 40. That is, "ensuring that inner section 22's circumferential rim, flanked by its endpoints, is the highest part of inner section 22 . . . [in order]

to avoid balls from escaping inner section 22." *Id.*; *see also id.* at 40–41 (citing Ex. 1004, 6:16–23) (noting that Bertoncino teaches that the circumferential rim is the highest point, a ball will be trapped and gravity will cause it to roll into the hole). According to Patent Owner, "if the circumferential rim is significantly tilted such that the forwardmost end is significantly lower than the rearmost end, the ball will leave inner section 22." *Id.* at 41.

Patent Owner contends, therefore, that Bertoncino teaches as its three-hole green embodiment, that some slope is needed to cause the balls that land in the back part of the middle and outermost rings to roll into the hole, but that the "slope cannot tilt circumferential rim 22 so much that it compromises the ball trapping function." *Id.* To support that argument, Patent Owner presents the following graphic:



Id. at 42; *see, e.g.*, Ex. 2013 ¶¶ 29, 34 (same). The graphic shows a representation of only the innermost section of the green of Figure 4 of Bertoncino, showing what might happen to a golf ball if hit into that section if one circumferential rim is significantly tilted such that the forwardmost end is significantly lower than the rearmost end.

Patent Owner argues that the need for any slope when using the innermost circle alone as the target green is eliminated, as there is no need

for gravity to guide the ball to the hole. PO Resp. 42. Rather, Patent Owner asserts, "tilting the circumferential rim so as to render inner section 22's forwardmost end significantly lower than the rearmost end . . . compromise[s] th[e] ball trapping function." *Id.; see also id.* at 42–45 (arguing the same).

Patent Owner contends:

> Significantly, given my construction, nothing in Figures 1, 2, 3, 4, 5, 6, 7, 8, or columns 1-14 lines 1-68 of the Bertoncino reference come within healing distance of suggesting that any circular target—either concentric or inner section 22—features "an elevation difference that, **for any given distance** from the tee, [1] enables the player, from the teeing area, to see the ball strike the green, then watch the ball roll down the slope toward the hole and [2] **enables the target green to catch on-target trajectories**." The textual evidence and Figure 4—the only view from the claimed vantage point—teach only one instruction for elevation difference for inner section 22. And that is to ensure its rim is its highest part to avoid balls from escaping it. This is the opposite of the sort of evidence needed to interpret that the forwardmost end is *significantly lower* than the rearmost end.

Id. at 45.

As to Figure 5 of Bertoncino, Patent Owner asserts that Figure does not show a view from the side of the target green. PO Resp. 46. Specifically, Patent Owner argues that the claims require a single vantage point, that is, the side of the target green. *Id.* at 47. Figure 5 of Bertoncino, Patent Owner maintains, does not show the target greens from the claimed vantage point. *Id.* Figure 4 of Bertoncino, however, according to Patent Owner, does show a green from a claimed vantage point. *Id.* Patent Owner asserts, therefore, that "if an artisan would even *contemplate* using Bertoncino's circular targets on a nonsensical slope terrain that bears no

resemblance to the slight slope needed to accomplish the stated function of the terrain slope in Bertoncino to drain golf balls, he or she would still confront Bertoncino's 'ball trapping' teaching which would counsel compensating for the terrain slope." *Id.* at 47–48 (citing Ex. 2013 ¶¶ 33, 34).

Moreover, Patent Owner argues, the depiction of the relative slopes of the target green and terrain in Figure 4 of Bertoncino are inconsistent with Figure 5 of that patent. *Id.* at 48. The only time Bertoncino discusses elevation is with respect to Figure 4, which, Patent Owner argues, "is not only the claimed vantage point but also the best view for elevation difference." *Id.* at 49 (citing Ex. 2012 ¶¶ 25–36).

In its Reply, Petitioner argues that Patent Owner's argument that a sloped target green is unnecessary when the target comprises only the inner section 22 contradicts the testimony of Patent Owner's experts. Reply 14. That is, Petitioner asserts, Patent Owner's experts "admitted that Bertoncino teaches the target has the same slope even when there is a single section that still helps the ball roll into the hole." *Id.* (citing Ex. 1010, 64:7–14, 67:19–22, 69:8–17, 71:19–22, 73:18–21; Ex. 1011, 62:22–63:5).

Moreover, Petitioner asserts, Bertoncino teaches a "sloped" driving range, but "Figure 4 does not show sloped terrain." *Id.* Thus, as seen in Figure 5, the target greens will "necessarily have [a] greater slope than Figure 4, which is what Figure 5 depicts." *Id.* at 14–15. Additionally, Petitioner argues that Figure 4 is focused on the ball return system and the interior configuration, and not slope, thus, Figure 5 is a "more reliable representation of the target's slope." *Id.* at 15. As to Patent Owner's argument that Figure 5 of Bertoncino should be ignored, Petitioner responds

that "the prior art must be considered for everything it teaches." *Id.* at 10 (citing *EWC Corp. v. Reliance Universal Inc.*, 755 F.2d 898, 907 (Fed. Cir. 1985)). And even if Figure 4 does not show a slope, Petitioner asserts that a slope is shown in Figure 5. *Id.* at 15.

In response to Patent Owner's criticism of Figure 5 that it shows a perspective view rather than a side view, Petitioner replies that "Figure 5 still shows the elevation difference between the target's front and back and shows a similar elevation difference to Figure 4C of the '389 patent." *Id.* That is supported by Mr. Robbins, Petitioner asserts, who testified "the target has the same relative elevations regardless of how it is viewed." *Id.* (citing Ex. 1003 ¶¶ 91, 93; Ex. 2011, 84:23–85:1, 187:8–12, 191:7–18, 193:13–25, 194:17–195:20, 210:21–24, 211:9–21; 218:3–6).

After considering Patent Owner's and Petitioner's positions, the arguments of Patent Owner do not persuade us that Petitioner has not demonstrated that Bertoncino teaches this limitation by a preponderance of the evidence. As Patent Owner notes, Bertoncino teaches:

> Optimally, the slope of the target and the configuration of the various surface areas within the target, preferably causes any coded ball hit by a user and coming to lie at any point in the inner section to be moved by gravity into the cup in the inner section and any coded ball coming top lie at any point within either annular section will be moved by gravity to the lowermost part of the corresponding channel and then to the cup in that section.

Ex. 1004, 6:3–11.

In addition, when discussing that disclosure of Bertoncino during cross-examination, Patent Owner's expert, Dr. Hurdzan, admitted that "Bertoncino tells the reader that the slope of the target contributes to the ball rolling in the cup." Ex. 1010, 64:6–13, 67:19–22. Dr. Hurdzan agreed, that

as taught by Bertoncino, "a target shaped entirely out of inner section 22 would also be generally sloped toward the tee stand." *Id.* at 73:18–21.

Moreover, as noted above, Bertoncino explicitly teaches that its target greens are sloped. Specifically, Bertoncino states that "[e]ach cup 30 in the sloped targets 20 and each hole 50 at the lower end of the gutter in each section of the standing target 40 are connected to an inclined system of tubing for the retrieval of balls that landed within a target." Ex. 1004, 7:47–51; *see also id.* at Abstract ("A golf range comprising a series of independent targets, each of which consists of a sloped area located at a different distance from a multiplicity of tee stands."). And as acknowledged by Mr. Hurdzan, Patent Owner's expert, Bertoncino does not teach that if the innermost section 22 were to comprise the entire target green that it should be sloped any differently than a target green with multiple sections. Ex. 1010, 74:2–5. Thus, we do not agree with Patent Owner that Petitioner is ignoring the teachings of Bertoncino.

As to Patent Owner's argument that one would not want to slope a single target section 20 of Bertoncino as it may allow for escape of the ball, Bertoncino already teaches that the inner section is sloped as shown in Figure 5 of that patent. Thus, as the purpose of Bertoncino is to catch balls and provide a score to the golfer, the ordinary artisan would expect that a target made up of only a sloped inner section 22, as is specifically suggested by Bertoncino (Ex. 1004, 5:44–52), to also be able to catch and score a golf ball.

In addition, we find that even if Figure 5 may not be at the perspective required by the claim, it still shows an elevation difference between the frontmost and the rearmost end of the target. Moreover, Bertoncino teaches

the use of a shock-absorbing material to aid in catching a golf ball (Ex. 1004, 6:33–37, 6:55–58), thus, Bertoncino was aware of the need of the target green to capture the ball. Other than presenting its "Do this. Don't do this" graphic, reproduced above, Patent Owner does not point us to any evidence of record demonstrating that the ordinary artisan would not expect a target green, as taught by Bertoncino, shaped entirely out of inner section 22 as sloped in Figure 5, to be able to capture a golf ball. In addition, to the extent that Patent Owner focuses this argument on the use of a driver to hit the golf ball, we note that, as discussed above in our construction of the claim term "providing a plurality of target greens which are remotely located from the plurality of golfing tees," the claims are not limited to using target greens that are to only be used to receive a golf ball hit by a driver.

Patent Owner acknowledges that Bertoncino teaches that the "golfer's ability to judge the length of his drive or chip is dependent upon his ability to follow visually the path of the ball and to see the lie." PO Resp. 50 (quoting Ex. 1004, 1:26–30). Patent Owner argues, however, that Bertoncino does not discuss sloping the green in order to see where the ball lands. *Id.* at 50–51. That argument is not convincing, because, as discussed above, the testimony of Mr. Robbins, supported by Meikle, demonstrates that the use of an inclined (*i.e.*, sloped) target to aid visualization of where the ball lands on the target would have been understood by the ordinary artisan. Moreover, our reviewing court has consistently held that "apparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1468 (Fed. Cir. 1990). "[T]he patentability of apparatus or composition claims depends on the claimed structure, not on the use or purpose of that structure." *Catalina Mktg. Int'l,*

Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 809 (Fed. Cir. 2002). Thus, the fact that Bertoncino does not explicitly disclose that the slope allows the golfer to see the path of the ball and its lie does not defeat our finding that Bertoncino teaches the structure of the target green required by the claimed method, wherein the foremost end of the target green is "significantly lower" that the rearmost end of the target green.

In addition, Patent Owner argues that Bertoncino does not render the claim limitation "significantly lower" obvious. PO Resp. 51–67.

Patent Owner initially asserts that, according to Petitioner, Bertoncino "discloses a target green with a section 22 that meets the slope requirements of the claim, and it says that the target green can be composed entirely of section 22." *Id.* at 51. Patent Owner urges, however that, when the innermost section is used alone, there is no need to slope the green. *Id.* at 51–52. Patent Owner contends also that Petitioner's expert, Mr. Robbins, testified that Bertoncino teaches the use of vertical targets for driver shots because the ordinary artisan would consider the circular targets are impractical at long distances due to their small size. *Id.* at 52. Moreover, even if one were to increase the size of the innermost target of Bertoncino, Patent Owner argues the resulting target would still not meet the "significantly lower" limitation of claim 1. *Id.* at 52–53. And as testified by Mr. Robbins, Patent Owner argues that "if you hit a low trajectory characteristic of low-loft clubs like drivers into a target green where the front is almost as high as the back, it won't stay there and will skip and go." *Id.* at 54 (comparing Ex. 1004, Fig. 4 with Ex. 2011, 197:6–9, 219:7–11, 231:20–232:1).

Next, Patent Owner argues that Petitioner's obviousness theory is unavailing. PO Resp. 55. In particular, Patent Owner asserts that Mr. Robbins testified that his obviousness theory was predicated on not altering inner section 22, and, as explained above, an unaltered innermost section 22 does not meet the "significantly lower" limitation as "properly construed." *Id*. (citing Ex. 2011, 207:13–17).

These arguments have been addressed above in our analysis of whether Bertoncino teaches the "significantly lower" limitation. Accordingly, they do not persuade us that Petitioner has not demonstrated by a preponderance of the evidence that Bertoncino does not render this limitation obvious.

Patent Owner contends also that even if Petitioner argued that the ordinary artisan would modify the innermost section to aid in visualizing the green and see where a ball landed, as well as ensuring that the ball will roll into the hole, there are other ways to obtain those goals. PO Resp. 56. Patent Owner asserts that as to visualization, one could use, among other things, colored balls, and "[t]o promote the target green's ability to capture the ball at realistic distances, enabling golfers to practice driving skills—the shortcoming of the prior art—one could do *exactly* what Bertoncino did and install a multi-level vertical structure." *Id.* at 56–57.

In addition, Patent Owner asserts that Petitioner's argument that the ordinary artisan would have sloped the green of Bertoncino in order to see where the ball lands is improper hindsight, as "[t]here is not one letter in one word in one column or one row or drawing in the Bertoncino reference that even remotely suggests that Bertoncino slopes the green to address being able to ***see where the ball lands***." *Id.* at 57.

Patent Owner avers that Petitioner's expert admitted that increasing the slope of the target will not aid in visualizing the ball when the factors Bertoncino discusses as impairing visibility, such as trees, obstacles, and poor eyesight, are present. *Id.* (citing Ex. 1004, 1:25–40; Ex. 2011, 235:18–23). In fact, Patent Owner contends, Bertoncino teaches that an object of the invention is to measure a golf shot without the golfer having to follow the path of the ball to see where it lands. *Id.* at 57–58 (citing Ex. 1004, 1:40–45). Furthermore, Patent Owner maintains that "Mr. Bertoncino disagrees with the statement, 'Bertoncino slopes the greens in this manner to address an issue it expressly notes, i.e., that a golfer needs to be able to easily see where the ball lands.'" *Id.* at 58 (citing Ex. 2013 ¶¶ 37, 38).

Patent Owner contends also that Petitioner relies on improper hindsight "with respect to ball capture." *Id.* (emphasis removed). According to Patent Owner, Mr. Robbins testified that Bertoncino requires the same criteria for capturing the ball as the challenged patent, but could not find support for that testimony in the Bertoncino patent. *Id.* (citing Ex. 2011, 182:20–24). Patent Owner insists that "[t]here is nothing in the evidentiary record indicating that Bertoncino sloped the terrain *or* his target greens sitting atop that terrain to avoid golf balls from bouncing away or catch low trajectories characteristic of low-loft clubs." *Id.* Bertoncino only talks about terrain slope, Patent Owner avers, in the context of returning stray balls. *Id.* at 58–59. And Patent Owner maintains further that Bertoncino only discusses the slope of the target green in order to assure target balls do not get stuck in outer sections 24 and 26. *Id.* at 59.

In particular, Patent Owner asserts:

> There are only two mentions in Bertoncino relating to ensuring that balls striking the circular targets remain within those targets: (1) ensuring that the elevations of the endpoints of the various sections are their highest parts to ensure balls don't skip sections which actually hurts Petitioner's argument because it discourages an artisan from tilting inner section 22 so much that its forwardmost end is significantly lower than its rearmost end; Ex. 1004, 6:15-32; and (2) selecting shock-absorbing materials for the surfaces to avoid balls from bouncing off, *id.* at 6:33-58.

Id.

Patent Owner states that the use of a shock-absorbing material is "a good way to arrest a trajectory," but asserts that the ball has to get to the back of the target in order for it to work. *Id*. And in order for it to get to the back of the target, the foremost end needs to be "significantly lower" than the rearmost end, otherwise "a low trajectory with sufficient velocity characteristic of driver shots isn't going to get there in the first place." *Id.* at 59–60. In that regard, Patent Owner notes that a ball that was hit using a golf club with a low angle loft, such as a driver, would come in at a low trajectory. *Id.* at 61. Mr. Robbins testified, however, that because the front of the green of Bertoncino is almost as high as the rearmost end, the ball would sail over both those ends. *Id.* (citing Ex. 2011, 232:14–22).

Patent Owner asserts:

> [*T*]*his* was the prior art shortcoming—inability to practice with low-loft clubs like drivers with which to practice driving skills at realistic distances. The '389 patent solves this with elevation difference which aids the target green in capturing the ball, as discussed in the file history. The patent specification doesn't contain an overview of different types of golf clubs, different trajectories, and so on. It doesn't need to. Its intended audience, as confirmed by three separate skilled artisans including Mr. Robbins, have expressed in clear terms

> that the target green must have a significantly lower forward most end to receive driver shots. Ex. 2011 at 17:09:39; Ex. 2012 ¶¶ 18-21; Ex. 2013 ¶¶15, 41, 48.

Id.

According to Patent Owner, the '389 patent taught the concept of using a "significantly lower" elevation for the foremost end of a target green as compared to a rearmost end, in order "to overcome the prior art's shortcoming of inability to practice driving skills at realistic distances." *Id.* at 62–63. That is, Patent Owner contends, "Mr. Robbins and Petitioner have used the '389 patent as a roadmap to misinterpret Bertoncino's circular target." *Id.* at 63. In fact, Mr. Robbins testified, Patent Owner argues, that Bertoncino's targets are inadequate for driver-range targets as small targets are harder to hit at 250 yards out, which is why Bertoncino used vertical targets. *Id*. (citing Ex. 2011, 222:11–15). That is further supported by Bertoncino's choice to deploy the targets at a height, Patent Owner asserts, as they were not intended to receive ground balls or low projectiles. *Id.* at 64 (citing Ex. 2013 ¶ 48).

Petitioner responds that "Bertoncino indisputably discloses its targets are 'sloped,' so the only issue is whether the claimed degree of elevation difference was obvious." Reply 16. According to Petitioner, however, the ordinary artisan "knew that making the front of the target 'significantly lower' had the benefits of (1) making it easier for the golfer to see where his shot landed and (2) making it more likely that the target would capture a shot that landed on it." *Id.* (citing Ex. 1003 ¶ 43; Ex. 1011, 29:3–20, 38:6–15; Ex. 1010, 55:22–56:14; Ex. 2011, 216:20–217:2, 208:19–24). Petitioner contends further that Patent Owner's expert, Mr. Bertoncino, "admitted that using a target that is significantly lower in front 'is obviously going to allow

for visibility and the ball to roll down to the bottom of the target.'" *Id.* at 16–17 (citing Ex. 1011, 48:12–14). Mr. Hurdzan agreed also, Petitioner avers, that "it would have been obvious to design a green to catch the golf ball once technology for scanning the ball became available." *Id.* at 17 (citing Ex. 1010, 106:7–15). Petitioner also cites Meikle as evidence that an inclined (*i.e.*, sloped) target green provides the appearance of a much larger target surface. *Id.* (citing Ex. 1015, Abstract).

Petitioner asserts further that the ordinary artisan would understand that making a target green "significantly lower" in the front would allow a golfer to see where the ball lands, as well as being effective in trapping a golf ball. Reply 18 (citing Ex. 1004, 1:26–30, 6:57–58; Ex. 1003 ¶ 43; Ex. 1011, 29:3–20, 38:6–15; Ex. 1010, 55:22–56:14). In that regard, Petitioner avers that one of Patent Owner's experts, Mr. Bertoncino, "admitted this was simply an 'optimization problem,'" and Mr. Hurdzan, Patent Owner's other expert, "acknowledged a skilled artisan could have adapted the inner section 22 of Bertoncino's Figure 4 to be a target that allowed visualization while also ensuring the target caught the ball." *Id.* (citing Ex. 1011, 42:21–43:5; Ex. 1010, 85:10–86:6, 87:9–88:1). Petitioner asserts also that Patent Owner's arguments that other methods of increasing visibility of the ball were known are also unavailing, as several of those methods, such as the use of colored balls, would still require the front of the target green to be significantly lower than the back of the green. *Id.* at 19.

Petitioner contends also that it does not affect the analysis as to whether Bertoncino tied its sloped target green to visualization, as the ordinary artisan would have understood that increasing slope would aid with visualization. *Id.* at 20 (citing Ex. 1011, 28:16–23). As to the ability of the

target green to capture the ball, Petitioner asserts that "Bertoncino teaches the importance of a target that captures the ball, by including a rim around inner section 22 to trap the ball there and shock absorbing turf 'for trapping balls landing in the target.'" *Id*. (citing Ex. 1004, 6:16–21, 6:55–58). In addition, Petitioner maintains that, as admitted by Patent Owner's expert, the ordinary artisan would have understood that sloping the target green would have aided in ball capture. *Id.* (citing Ex. 1003 ¶ 43; Ex. 1011, 29:3–20, 38:12–15; Ex. 1010, 56:8–14, 78:12–23, 79:6–13, 81:3–16, 106:7–15). Given that knowledge, Petitioner argues, it does not matter that Bertoncino did not specifically state that a sloped target will assist ball capture, asserting, moreover, that the "'389 patent never said its targets assist with ball capture either." *Id.* at 21.

Again, after considering Patent Owner's and Petitioner's arguments, we agree with Petitioner and conclude that Petitioner has established by a preponderance of the evidence that to the extent that Bertoncino does not disclose this limitation, it renders it obvious. In that regard, as discussed above, Bertoncino specifically teaches a sloped target green, but does not explicitly state that the frontmost end is significantly lower than the rearmost end. *See, e.g.*, Ex. 1004, Abstract. As evidenced by Meikle, however, the ordinary artisan would have understood at the time of invention that making the frontmost end significantly lower than the rearmost end would allow the golfer to see where the ball lands. Ex. 1015, 2:27–34.

In that regard, we note that Mr. Bertoncino declares that "[m]ost golf driving range greens and golf course greens are slightly up-sloped to

promote visualization." Ex. 2013 ¶ 37. In addition, Mr. Robbins, during cross-examination, testified:

> Q. Would -- do you still maintain your testimony in paragraph 38, the last line where you state that "greens on golf courses are often slightly sloped such that the rear portion is higher than the front portion in order to allow the golfer to visualize the green"?
>
> A. I do.
>
> Q. And this has been true traditionally for a long time; right?
>
> A. Most greens do slope from back to front because of visualization and stopping a golf shot from running over them. There are exceptions, though, like everything else in golf, yes.

Ex. 2011, 208:13–24.

The testimony of both Mr. Bertoncino and Mr. Robbins supports our finding that it was known that sloping a target green allows for visualization of where the ball lands. Thus, it would have been obvious to the ordinary artisan to provide a slope for the sloped target greens of Bertoncino that allows for visualization of a ball's lie. The fact that Bertoncino may not expressly state that sloping the target green would aid in visualizing where the ball lands does not convince us otherwise because that would have been an advantage that would have already been understood by the ordinary artisan.

We conclude that visualization of where the ball lands is a sufficient reason to modify the slope of the target greens of Bertoncino. In that regard, we note that Patent Owner does not point us to any evidence of record that one would obtain a different slope for the target green if only looking at visualization of the golf ball as opposed to looking at the ability of the target green to capture a ball as well as allowing the golfer to visualize the ball.

Moreover, however, Mr. Robbins, in his testimony excerpted immediately above, states that it was known that slope also stopped a golf shot from running over the green. Thus, we find that the ordinary artisan would understand that adding slope would also increase the ability of the target green to capture the ball.

Moreover, we agree with Petitioner (Reply 19–20) that the fact that there have been other ways to aid in visualizing where the ball lands does not make the use of slope any less obvious. *See, e.g.*, *KSR*, 550 U.S. at 421 ("When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp."); *In re Mouttet*, 686 F.3d 1322, 1334 (Fed. Cir. 2012) ("[J]ust because better alternatives exist in the prior art does not mean that an inferior combination is inapt for obviousness purposes."). The fact that Bertoncino teaches that there may be other factors that may affect the ability of the golfer to see the lie of the ball, such as the presence of physical obstructions such as trees or bushes, or because of the poor eyesight of a golfer, does not obviate that it was known in the art that sloping the target green would allow the golfer to more easily visualize the lie of the ball. Bertoncino teaches a driving range generally, and that it may be used for entertainment purposes (Ex. 1004, 3:43–48), which may attract a wide variety of golfers of different ages and skill levels. The ability to sense and score the ball if it enters the hole of one of the target greens would aid in those instances where the lie of the ball could not be determined, and provide for an impartial scoring system.

Finally, as to Patent Owner's argument that Bertoncino chose to deploy the targets at a height as they were not intended to receive ground balls or low projectiles, that argument is not persuasive as Bertoncino also explicitly teaches that the green may be shaped into the terrain of the range, as shown in Figure 5. Ex. 1004, 6:40–44, 6:62–65. A reference disclosure is not limited only to its preferred embodiments, but is available for all that it discloses and suggests to one of ordinary skill in the art. *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976).

Accordingly, for the reasons discussed above, we find that Bertoncino teaches a target green wherein the forward most end located at the forward portion of the target green has an elevation that is significantly lower than at its rearmost end. We further determine that to the extent that the target green of Bertoncino does not meet the "significantly lower" limitation, it would have been obvious to the ordinary artisan at the time of invention to increase the slope of the target green of Bertoncino to aid in visualizing the lie of the ball, as well as allow the target green to capture the ball.

j. "(e) sensing said identifying characteristic of the golf ball, and identifying from which of said plurality of golfing tees the golf ball originated"

Petitioner argues that Bertoncino expressly teaches this limitation. Pet. 50–52 (citing Ex. 1004, 3:36–28, 5:4–9, 5:17–23, 9:1–11, 9:63–10:5, Figs. 1a–1c, 2, 6, 7; Ex. 1003 ¶¶ 95–96).

We agree and find that Bertoncino discloses this limitation. For example, as discussed above, Figures 1A through 1C of Bertoncino show golf balls labeled with a universal product code. Ex. 1004, 3:63–4:3. According to Bertoncino, an attendant will assign a tee stand and provide a container to each golfer. *Id.* at 9:32–35. The attendant feeds the container

number into the computer, which triggers the identification of all the balls in the container, as well as the tee stand assigned to the golfer. *Id.* at 9:35–41. Thus, the universal product code then can be associated with the tee stand used by any particular golfer.

k. "(f) indexing the score of the scoring device which is located at the golfing tee corresponding to the identifying characteristic of said golf ball"

Petitioner contends that the combination of Bertoncino and Foley renders this limitation obvious. Pet. 52–58. In particular, Petitioner asserts that Bertoncino teaches that each target has an associated scanner, and that the scanner is associated with a central computer that records the score associated with a particular ball and tee. *Id.* at 53 (citing Ex. 1004, 8:55–63, 5:17–23, Fig. 8). The central computer indexes the scores, adds them to the total for the round, and generates a score card unique to the player and sends it to the clubhouse. *Id.* at 54 (citing Ex. 1004, 9:45–10:5, 10:43–49, 10:51–11:3, Fig. 8; Ex. 1003 ¶¶ 49, 60, 97, 99). Petitioner argues further that Foley shows a driving range wherein each tee has an associated scoring device. *Id.* at 55 (citing Ex. 1006, 2:7–12, 4:16–19, 4:34–43, 4:62–5:21, 6:26–7:2, Figs. 1, 3; Ex. 1003 ¶¶ 65, 101).

Thus, according to Petitioner, the ordinary artisan would have had a reason to "incorporate Foley's concept of having an individual scoring device" to provide each golfer's score as taught by Bertoncino in order to provide a real-time score during play of the game. *Id.* at 55–56 (citing Ex. 1003 ¶¶ 62, 67, 68, 102).

Patent Owner argues that "Petitioner submits **zero** evidence about the communications network an artisan would need to deploy to connect

Bertoncino's clubhouse to Foley's scoring devices." PO Resp. 67. Specifically, Patent Owner argues:

> Bertoncino's scanners-to-clubhouse network is **not** the requisite point-to-multipoint network. Foley teaches a point-to-multipoint communications network (from a central computer to the scoring devices) that runs on a timing mechanism on a synchronizer that tracks the most recently struck ball. Ex. 1006, 5:4; 6:32-53. The Board should construe the indexing step as occurring after each shot. Ex. 1001, 8:33. Foley's point-to-multipoint network does not work.

Id.

Petitioner responds that the "only difference between Bertoncino's system and the '389 claims is that Bertoncino uses a computer at the clubhouse to generate printed scorecards rather than sending the scoring information to scoring devices at the tee." Reply 21. Petitioner asserts that Foley demonstrates that it was known at the time of invention to place a scoring device at each tee, and both Bertoncino and Foley teach the use of "off-the-shelf computers to implement their disclosures, so they could have been readily combined." *Id.* at 21–22 (citing Ex. 1003 ¶ 101; Ex. 1004, 9:16–31, 11:4–6; Ex. 1006, Fig. 1, 4:12–19, 4:62–5:30, 6:26–43). Thus, Petitioner asserts, "a skilled artisan had a reasonable expectation that adding Foley's 'conventional' hardware for communicating information to scoring devices to Bertoncino's system for identifying balls and indexing scores would succeed." *Id.* at 22 (citing Ex. 1003 ¶ 102). Moreover, Petitioner asserts, the patent at issue "refers to generic components, like a 'personal computer' and 'data acquisition printed circuit boards.'" *Id.* (citing Ex. 1001, 7:27–43, Fig. 7).

We determine that Petitioner has demonstrated by a preponderance of the evidence that the ordinary artisan would have placed the scoring device

at the tee as taught by Foley in the driving range and golfing scoring system of Bertoncino because both Foley and Bertoncino teach the use of conventional computer systems, and, teach generation of a score. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) ("The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art".). Thus, we agree with Petitioner that it would be a simple "substitution of one known element for another to obtain a predictable and improved result" (Pet. 58) to send the score to the teeing area as taught by Foley rather than the clubhouse as taught by Bertoncino in order for the golfer to obtain a more real-time analysis of his or her score.

l. Conclusion as to claim 1

We have reviewed Petitioner's and Patent Owner's arguments and evidence, as discussed above, and conclude that Petitioner has demonstrated by a preponderance of the evidence that independent claim 1 would have been rendered obvious by the combination of Bertoncino and Foley.

In the analysis above, due to the length of the claim, we analyzed the elements of claim 1 separately. For the reasons discussed above, we agree with Petitioner (Pet. 21–22) that Bertoncino teaches or suggests a target green that meets the requirements of claim 1 except that Bertoncino shows receiving the score card at the club house, rather than a scoring device located at each tee. Foley is evidence that such scoring devices were known in the art at the time of invention. Thus, the combination of Bertoncino and

Foley renders obvious the individual steps and elements of claim 1, as well as the method of claim 1 as a whole.

We conclude, therefore, that Petitioner has met its burden and demonstrated that claim 1 is unpatentable over the combination of Bertoncino and Foley by a preponderance of the evidence.

m. Claim 6

As to dependent claim 6, Petitioner argues that claim only adds the limitation of "the step of indexing the score of said scoring device provides a different score value of said target greens." Pet. 58. Petitioner asserts, however, that Bertoncino teaches that limitation by teaching that each of the target greens is located a different distance from the tee, and also discloses a scoring formula where a player's shot is "assigned a particular number of points based on the target's size and distance from the tee to the target." *Id.* at 58 (citing Ex. 1004, 1:67–2:3, 9:55–10:5, 9:49–54, 10:5–51, 9:16–22, Figs. 2, 5, 8; Ex. 1003 ¶ 103). Petitioner notes also that Foley discloses further the assignment of a score based on the distance of the targets from the green. *Id.* at 59 (citing Ex. 1006, 5:6–21). Patent Owner does not separately argue claim 6.

After considering Petitioner's arguments and evidence, we adopt Petitioner's analysis of this dependent claim as our own, and conclude that Petitioner has demonstrated by a preponderance of the evidence that claim 6 is rendered obvious by the combination of Bertoncino and Foley, because the cited portions of Bertoncino and Foley disclose providing different score values to different targets.

C. Constitutionality

Patent Owner argues that *inter partes* review proceedings are unconstitutional. PO Resp. 69–70. The United States Supreme Court has held, however, that "inter partes review does not violate Article III or the Seventh Amendment." *Oil States Energy Services, LLC v. Greene's Energy Group, LLC*, 2018 WL 1914662 at *12 (U.S. Apr. 24, 2018) ("*Oil States*"). The Court did emphasize the narrowness of its holding, stating that *Oil States* did not challenge the retroactive application of *inter partes* review to patents that had issued before the process was put in place. *Id.* at *11.

In a conference call held after the oral hearing, Patent Owner requested additional briefing left open by the *Oil States* decision, that is, whether retroactive application of the *inter partes* review process to those patents for which the process was not in place at the time of issue is unconstitutional. Paper 36, 4–5. Both Patent Owner (Paper 38) and Petitioner (Paper 39) filed a one-page brief addressing that issue. We have considered those arguments, but agree with Petitioner that the patent at issue here was subject to *ex parte* reexamination, and, therefore, the United States Patent and Trademark Office has always had the ability to look at the patentability of an issued United States Patent. *See Patlex Corp. v. Mossinghoff*, 758 F.2d 594 (Fed. Cir. 1985), *aff'd in relevant part* 771 F.2d 480.

III. CONCLUSION

After considering Petitioner's and Patent Owner's arguments and evidence, we conclude that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 6 of the '389 patent are unpatentable.

IV. ORDER

Accordingly, it is hereby:

ORDERED that Petitioner has demonstrated by a preponderance of the evidence that claims 1 and 6 of the '389 patent are unpatentable under 35 U.S.C. § 103(a); 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.

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