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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* HIDEO WATANABE

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Appeal 2011-003164  
Application 11/680,235  
Technology Center 3700

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Before EDWARD A. BROWN, ANNETTE R. REIMERS and  
RICHARD E. RICE, *Administrative Patent Judges*.

RICE, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Hideo Watanabe (Appellant) seeks our review under 35 U.S.C. § 134 of the Examiner's rejection of claims 1-12. An oral hearing was held February 11, 2013. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

*The Claimed Subject Matter*

The claimed subject matter “relates to a golf ball which reduces the difference in travel distance with a driver [] between high-head speed golfers and low-head speed golfers, as compared with prior art golf balls.” Spec. 1, ll. 13-16. Claim 1 is the only independent claim. Claims 1 and 2 are representative of the subject matter on appeal:

1. A golf ball comprising a core and a cover of one or more layers, characterized in that said golf ball has an outer diameter of 43.2 to 44.0 mm and an initial velocity of at least 77.5 m/s measured by the USGA rotary drum initial velocity instrument approved by R&A.

2. The golf ball of claim 1, wherein the value  $A$  obtained by dividing the ball initial velocity (m/s) by the ball outer diameter (mm) is in the range  $1.78 \leq A \leq 1.80$ .

*The Rejections*

The following Examiner’s rejections are before us for review:

- (1) claims 1, 2, 4-6, 11 and 12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Watanabe ’998 (US 2001/0055998 A1, pub. Dec. 27, 2001) and Binette (US 2001/0024981 A1, pub. Sep. 27, 2001); and
- (2) claims 3 and 7-10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Watanabe ’998, Binette and Watanabe ’673 (US 2001/0031673 A1, pub. Oct. 18, 2001).

OPINION

*Rejection (1) – Claims 1, 2, 4-6, 11 and 12*

Appellant argues only claims 1, 2 and 11 separately. We select claims 4-6 and 12 to stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2011).

*Claim 1*

The Examiner finds that Watanabe '998 discloses substantially all of the limitations of claim 1, including a golf ball having an initial velocity in excess of 77.7 m/s, preferably 78.0 m/s or higher, and an outer diameter of not less than 42.67 mm. Ans. 3-5; *see also* Watanabe '998, paras. [0039], [0047]. The Examiner also finds that “[Watanabe '998's] golf ball has a diameter not less than 42.67 mm and a weight not greater than 45.93 g under the Rules of Golf approved by R&A.” *Id.* at 5 (citing Watanabe '998, para. [0047]). The Examiner further finds that the range of the golf ball outer diameter disclosed by Watanabe '998 (not less than 42.67 mm) encompasses the claimed golf ball outer diameter range of 43.2 to 44.0 mm. Ans. 5.

The Examiner finds that Binette discloses a golf ball having an outer diameter in the range of 42.67 to 45.72 mm (1.68 to 1.8 inches). Ans. 4-5; *see also* Binette, para. [0036]. The Examiner further finds that “[v]arying the diameter of a golf ball by routine experimentation above the industry minimum requirement of 42.67 mm is within the capabilities of one skilled in the art.” *Id.* at 7. The Examiner explains that “[w]hile Watanabe ['998] clearly includes Appellant's claimed range, Binette is cited as a secondary reference to teach larger golf balls are not new in the golfing art.” *Id.* at 5.

The Examiner concludes that “[s]ince the primary reference, Watanabe '998, discloses the diameter may not be less than 42.67 and

Binette, the secondary reference, teaches golf balls with diameters from 42.67 to 45.72 mm (1.68 to 1.8 inches)[,] the limitation is satisfied.” *Id.* at 6.

Appellant argues that the Examiner’s rationale for combining Binette with Watanabe ’998 impermissibly stems from Appellant’s own disclosure; that merely alleging that a skilled artisan is capable of varying the diameter of the golf ball does not explain why such an artisan would specifically choose the claimed range of 43.2 mm to 44.0 mm when modifying the golf balls of Watanabe ’998; and that golf balls with diameters outside of the claimed range such as those disclosed in Binette have deficiencies relative to golf balls with diameters in the claimed range. Reply Br. 4-5; App. Br. 9-14. Appellant does not challenge the Examiner’s finding that varying the diameter of a golf ball by routine experimentation above 42.67 mm is within the capabilities of one skilled in the art, but rather argues that

[m]erely relying on the fact that Watanabe ’998’s golf ball (with a diameter not less than 42.67 mm) is made according to the Rules of Golf as approved by R&A and then conclusively alleging that variation in the diameter of the golf ball is part of routine experimentation in the art does not show how the skilled artisan would arrive at the specifically claimed diameter range of 43.2 to 44 mm, especially in view of the particular objectives of the inventors of the claimed golf ball, explained in detail in the Appeal Brief (e.g., see Appeal Brief, pages 10-12).

Reply Br. 6. Appellant contends that “[t]he claimed outer diameter range of 43.2 to 44.0 mm coupled with the initial velocity of at least 77.5 m/s allows minimization of the difference in travel distance with a driver between high-head speed and low-head speed golfers . . . .” App. Br. 10 (citing Spec. 2, 4-6 and 29-31; MPEP § 2144.05.III). Appellant points to the Specification’s disclosure that “[w]ith too large a ball outer diameter, a desired travel distance may not be [] acquired” and that “with too small a ball outer

diameter, the ball will travel too long a distance . . . , failing to restrain the supremacy in travel distance of high-head speed golfers.’” App. Br. 11 (quoting Spec. 4, l. 26 – 5, l. 2).

Appellant’s arguments do not persuade us of error in the Examiner’s rejection of claim 1 as obvious over Watanabe ’998 and Binette. The controlling principles as stated by the Federal Circuit are as follows:

In light of th[e] case law, we conclude that a *prima facie* case of obviousness was made out in this case. Selecting a narrow range from *within* a somewhat broader range disclosed in a prior art reference is no less obvious than identifying a range that simply overlaps a disclosed range. In fact, when, as here, the claimed ranges are completely encompassed by the prior art, the conclusion is even more compelling than in cases of mere overlap.

*In re Peterson*, 315 F.3d 1325, 1329-30 (Fed. Cir. 2003). The Examiner correctly applied these principles in determining that Watanabe ’998’s disclosed range of golf ball outer diameter completely encompasses the claimed range to create a *prima facie* case of obviousness.

That the claimed range falls within the range disclosed in Watanabe ’998 itself provides sufficient motivation to optimize the range. *See In re Applied Materials, Inc.*, 692 F.3d 1289, 1295 (Fed. Cir. 2012) (citing *Peterson*, 315 F.3d at 1330 (“The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of . . . ranges is the optimum combination . . . .”). As evidenced by the U.S.G.A. standards specifying maximum weight and minimum outer diameter and supported by Binette’s disclosure,<sup>1</sup>

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<sup>1</sup> See, e.g., Binette, para. [0036] (disclosing that “cover compositions about molded cores” can be used “to produce a golf ball having a diameter of

a person of ordinary skill in the art would have known that the outer diameter of the golf ball is a result-effective variable relevant to performance within a range of 42.67 to 45.72 mm (1.68 to 1.8 inches), rendering its optimization within the ordinary skill in the art. *See Applied Materials*, 692 F.3d at 1297 (“A recognition in the prior art that a property is affected by the variable is sufficient to find the variable result-effective.”); *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980) (“[D]iscovery of an optimum value of a result effective variable . . . is ordinarily within the skill of the art.”).

Because the prior art teaches smaller and larger golf ball outer diameters than claimed and a person having ordinary skill in the art would have known that the diameter was a result-effective variable, the specifically claimed range of diameter was unnecessary to the Examiner’s determination of obviousness. *See In re Applied Materials, Inc.*, 692 F.3d 1289, 1296 (Fed. Cir. 2012) (finding that the exact doubling of dimensions in the prior art to achieve the claimed dimensions was unnecessary to the Board’s determination of obviousness). Appellant’s arguments to the contrary are not persuasive. *See App. Br. 9-10; Reply Br. 4.*

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about 1.680 to about 1.800 inches and weighing about 1.620 ounces” and that “[t]he standards for both the minimum diameter and maximum weight of the balls have been established by the United States Golf Association (U.S.G.A.)”; *id.* at para. [0075] (disclosing that “thicker cover compositions” can result in “larger than normal (i.e. greater than 1.680 inches in diameter) balls” and permit only limited use of “fillers and modifying agents in order to meet the U.S.G.A. maximum weight limitation[] of 1.620 ounces”); *id.* at para. [0131] (“filler materials are included in order to affect moment of inertia and spin of the golf ball”); *id.* at para. [0133] (“[W]eight may be removed from the core and placed in the inner and/or outer cover. This added weight will change the moment of inertia of the ball thereby potentially altering performance.”).

“The outcome of optimizing a result-effective variable may still be patentable if the claimed ranges are ‘critical’ and ‘produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art.’” *Applied Materials*, 692 F.3d at 1298 (quoting *In re Aller*, 220 F.2d 454, 456 (1955) and citing *In re Antonie*, 559 F.2d 618, 620 (CCPA 1977)). “Similarly, a prima facie case of obviousness established by the overlap of prior art values with the claimed range can be rebutted by evidence that the claimed range is ‘critical’ because it ‘achieves unexpected results.’” *Applied Materials*, 692 F.3d at 1298 (citations omitted)). Here, however, Appellant’s argument that “[t]he claimed outer diameter range of 43.2 to 44.0 mm coupled with the initial velocity of at least 77.5 m/s allows minimization of the difference in travel distance with a driver between high-head speed and low-head speed golfers” (App. Br. 10) is insufficient to establish unexpected results. *See In re Huang*, 100 F.3d 135, 139 (Fed. Cir. 1996) (“[E]ven though applicant’s modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art, unless the claimed ranges ‘produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art.’”). Appellant has not provided any persuasive argument or evidence showing that the travel distance of the claimed golf ball is unexpected, or different in kind and not merely in degree from the travel distance of the prior art golf balls.

Accordingly, we sustain the Examiner’s rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over Watanabe ’998 and Binette. Claims 4-6 and 12 fall therewith.

*Claims 2 and 11*

Claim 2 calls for the variable “A,” obtained by dividing the golf ball initial velocity (m/s) by the golf ball outer diameter (mm), to be in the range  $1.78 \leq A \leq 1.80$ ; and claim 11 calls for “A” to be in the range  $1.78 \leq A \leq 1.79$ . With respect to claims 2 and 11, the Examiner reasons that “[s]ince the initial velocity is disclosed by Watanabe [’998] and the diameter is disclosed by Watanabe [’998] in view of Binette[,], any equations/calculations based on those values are satisfied.” Ans. 7.

Appellant argues that Watanabe ’998’s example golf balls, as listed in Table 1 (col. 4), do not teach or suggest the claimed range. App. Br. 14-15. Appellant also argues that Binette does not cure the “deficient teachings” of Watanabe ’998. *Id.* at 16. Appellant contends that “even if a skilled artisan were to modify the golf ball diameter of Watanabe ’998 in view of Binette’s teachings of a diameter of 42.67 to 45.72 mm, there is no reason a skilled artisan would tailor the diameter of the golf ball such that the golf ball diameter, *in conjunction with the claimed initial velocity*, would lead to the claimed range for A ( $1.78 \leq A \leq 1.80$  in claim 2, and  $1.78 \leq A \leq 1.79$  in claim 11) . . . .” *Id.* at 17. Appellant maintains that “as disclosed in the Specification on pages 5 and 6, if the value A is too large (i.e., larger than the claimed upper limit ‘1.80’), the ball will travel too long a distance, sometimes making it difficult to restrain the travel distance, especially by high-head speed golfers.” *Id.* at 15. Appellant contends that “if the difference in travel distance between high and low-head speed golfers is reduced to lessen the handicap difference between the golfers, the golf ball becomes of greater value to both high and low-head speed golfers (e.g., see the comparison between Examples and Comparative Examples shown in

Table 3 on page 30 of the Specification which discloses the inventive unique effects based on the claimed features of the golf ball).” *Id.* at 16.

Again, we are not persuaded by Appellant’s arguments. As discussed *supra* with respect to claim 1, a person of ordinary skill in the art would have known that the outside diameter of the golf ball was a result-effective variable relevant to performance within a range of 42.67 to 45.72 mm. Further, as evidenced by both Binette and Watanabe ’998,<sup>2</sup> the person of ordinary skill would have known that the initial velocity of the golf ball was also a result-effective variable relevant to performance, at least in the range of 77.7 m/s to 78.0 m/s. Thus, optimization of the diameter (in the range of 42.67 to 45.72 mm) and the velocity (in the range 77.7 m/s to 78.0 m/s) was within the capability of the person of ordinary skill in the art. *See Applied Materials*, 692 F.3d at 1297; *Boesch*, 617 F.2d at 276. The value of “A” obtained by dividing the velocity of 77.7 m/s by 45.72 mm is 1.70, and the value of “A” obtained by dividing 78.0 m/s by 42.67 mm is 1.83. Because the person of ordinary skill would have known that the velocity and the diameter were result-effective variables relevant to performance in the range of “A” from 1.70 to 1.83, which completely encompasses the ranges of claims 2 and 11, the specifically claimed ranges were unnecessary to the Examiner’s determination of obviousness. *See Applied Materials*, 692 F.3d at 1296.

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<sup>2</sup> For example, Binette discloses the U.S.G.A.’s standard specifying a maximum initial velocity of 255 feet/second, i.e., 77.7 m/s (Binette, para. [0051]); and Watanabe ’998 discloses that “[w]hen the initial velocity is not higher than 77.7 m/s, the ball travels merely a distance over which a conventional ball travels” but “[a] preferred range of initial velocity is 78.0 m/s or higher.” Watanabe ’998, para. [0039].

While Watanabe '998's example golf balls, as listed in Table 1 (col. 4), are outside the claimed range of "A" (*see* App. Br. 15 (table, listing values of "A" for the example golf balls ranging from 1.82 to 1.83)), each of the example golf balls has a diameter of only 42.7 mm. Appellant's argument attempting to distinguish Watanabe '998 based on this disclosure ignores that both Watanabe '998 and Binette disclose larger diameter golf balls and that optimizing the diameter and velocity of the golf balls to create a value of "A" in the claimed range was within the level of skill in the art.

Table 3 of Appellant's Specification presents test results for three Examples within the claims and three Comparative Examples outside the claims. The test results do not persuade us that the travel distance of the golf ball of claim 2 or claim 11 is unexpected, or different in kind and not merely in degree from the travel distance of the prior art golf balls. *See* App. Br. 15-16; Reply Br. 8; Spec. 30-31, table 3.

We note, for example, that Comparative Example 1 has the same diameter (43.6 mm) as Example 1, but a lower initial velocity (77.2 m/s as compared with 78.1 m/s); thus, the "A" value of Comparative Example 1 is lower than the "A" value of Example 1 (1.77 as compared with 1.79). Given the difference in initial velocity, we do not find it surprising that the travel distance of Comparative Example 1 is, to some degree, shorter than the travel distance of Example 1 at both of the two head speeds tested (45 and 35 m/s). We fail to see anything unexpected, or different in kind and not merely in degree, in the test results.

Accordingly, we sustain the Examiner's rejection of claims 2 and 11 under 35 U.S.C. § 103(a) as unpatentable over Watanabe '998 and Binette.

*Rejection (2) – Claims 3 and 7-10*

Claim 3 depends from claim 1 and additionally recites that “said ball has a weight of 45.0 to 45.9 g, and said core at its center has a Shore D hardness of 30 to 50.” Claims 7 and 9 depend from claim 1, and claims 8 and 10 depend from claim 3. Claim 10 additionally recites that “the weight of the golf ball is 45.2 to 45.7 g.”

As to claims 3 and 10, the Examiner finds that Watanabe ’998 discloses a golf ball weight of not greater than 45.93 g (*see* Watanabe, para. [0047]) and that Watanabe ’673 discloses a Shore D hardness of the center core of a golf ball ranging “from 30 to 45 (50-70 JIS-C)” (*see* Watanabe ’673, para. [0021]). Ans. 4. The Examiner concludes that “[o]ne of ordinary skill in the art would have modified the core of Watanabe ’998 for the desired durability.” *Id.*

As to all of the claims subject to this rejection, Appellant argues that Watanabe ’673 does not cure the deficiencies of Watanabe ’998 and Binette with respect to claim 1. App. Br. 17. Appellant additionally argues as to claim 10 that Watanabe ’998 “does not even remotely suggest that the golf ball weight is specifically between 45.2 to 45.7, as claimed.” *Id.* at 18. Appellant further argues that Binette teaches away from the weight range of claim 10 by disclosing that fillers are relatively inexpensive and heavy and serve to lower the cost of the ball and to increase its weight to closely approach the U.S.G.A. limit of 1.620 ounces (45.93 g). *Id.* Appellant contends that “a skilled artisan would look at Binette’s teachings regarding the construction of its golf ball’s core” and “would be led to produce a golf ball having a weight closely approaching 45.93 grams, which teaches away from the claimed range of 45.2 to 45.7 grams.” Reply Br. 10.

We do not agree with Appellant's argument as to claims 3 and 7-10 that Watanabe '673 does not cure the deficiencies of Watanabe '998 and Binette with respect to claim 1, because as discussed *supra* there are no deficiencies to cure. Further, we agree with the Examiner that Watanabe '998's disclosed weight range completely encompasses the weight range of each of claims 3 and 10 to create a *prima facie* case of obviousness. In addition to disclosing the encompassing range of not greater than 45.93 g, Watanabe '998 discloses golf balls weighing 45.3 g, which falls just inside the 45.2 to 45.7 g range of claim 10. Watanabe '998, tables 1, 2, 3 and 4. As the weight of Watanabe '998's golf ball is a result-effective variable relevant to performance within the claimed range,<sup>3</sup> the person of ordinary skill in the art could have optimized the weight to obtain the claimed weight range through routine experimentation, as the Examiner found. *See Applied Materials*, 692 F.3d at 1297; *Boesch*, 617 F.2d at 276. We do not agree with Appellant's argument that Binette teaches away from the weight range of claim 10. Binette discloses that fillers can be used to increase the weight to closely approach 45.93 g, but does not criticize, discredit, or otherwise discourage golf balls weighing less than 45.93 g. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004)). Accordingly, we sustain the Examiner's rejection of claims 3 and 7-10 under 35 U.S.C. § 103(a) as unpatentable over Watanabe '998, Binette and Watanabe '673.

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<sup>3</sup> *See id.*; note 1 *supra*.

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Application 11/680,235

DECISION

We affirm the rejections of claims 1-12.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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