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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte CHIEMI MIKURA, SHUN KURIHARA,
AYAKA SHINDO, and RYOTA SAKAMINE

Appeal 2019-002740
Application 13/830,156
Technology Center 3700

Before MICHAEL L. HOELTER, MICHAEL J. FITZPATRICK, and
LISA M. GUIJT *Administrative Patent Judges*.

HOELTER, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–13, 15, 16, 18, 21, and 26–29. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42(b). Appellant identifies itself as the sole real party in interest. Appeal Br. 1.

CLAIMED SUBJECT MATTER

The disclosed subject matter “relates to a golf ball traveling a great distance on driver shots, in particular, an improvement of a core of a golf ball.” Spec. 1:5–6. Apparatus claims 1 and 15 are independent. Claim 1 is illustrative of the claims on appeal and is reproduced below.

1. A golf ball having a spherical core and at least one cover layer covering the spherical core,
 - wherein the spherical core has a hardness difference between a surface hardness and a center hardness of 25 or more and 80 or less in JIS-C hardness and is formed from a rubber composition consisting essentially of:
 - (a) a base rubber,
 - wherein (a) the base rubber is a high-cis polybutadiene having a cis-1,4 bond in a proportion of 40% or more, and the high-cis polybutadiene has a molecular weight distribution Mw/Mn ranging from 2.0 to 6.0,
 - (b) a metal salt of an α , β -unsaturated carboxylic acid having 3 to 8 carbon atoms as a co-crosslinking agent,
 - (c) a crosslinking initiator,
 - (d) a carboxylic acid having 5 to 30 carbon atoms, or only one compound selected from the group consisting of a salt of a carboxylic acid having 5 to 11 carbon atoms, zinc laurate, zinc myristate, zinc palmitate, zinc stearate, zinc behenate, zinc montanate, and zinc 12-hydroxystearate, not including an α , β -unsaturated carboxylic acid having 3 to 8 carbon atoms and/or a metal salt thereof,
 - (e) a halogen-substituted thiophenol and/or a metal salt thereof as an organic sulfur compound, and
 - a filler,
 - wherein (c) the crosslinking initiator is present in an amount of more than 0.5 parts by mass and 5.0 parts by mass or less with respect to 100 parts by mass of (a) the base rubber,
 - the spherical core has a center hardness ranging from 30 to 55.4 in JIS-C hardness and a compression deformation amount of 4.1 mm or more and 6.0 mm or less when applying a

load from an initial load of 98N to a final load of 1275N to the spherical core; and

the golf ball has a compression deformation amount in a range from 3.4 mm to 5.0 mm when applying a load from an initial load of 98 N to a final load of 1275 N to the golf ball.

EVIDENCE

Name	Reference	Date
Melvin et al. (hereinafter “Melvin”)	US 5,779,562	July 14, 1998
Higuchi et al. (hereinafter “Higuchi”)	US 2008/0312008 A1	Dec. 18, 2008
Watanabe et al. (hereinafter “Watanabe”)	US 2011/0143861 A1	June 16, 2011
Isogawa et al. (hereinafter “Isogawa”)	US 2011/0250991 A1	Oct. 13, 2011

REJECTIONS

Claims 1–3, 6–9, 11–13, 26, and 28 are rejected under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Higuchi and Watanabe.^{2, 3, 4}

² The Examiner initially listed claims 19 and 22, but their limitations were subsequently incorporated into claim 1. *See* Ans. 2. The limitations of claim 23 were also incorporated into claim 1. *See* Ans. 2. Because claim 23 is rejected as unpatentable over Higuchi *and* Watanabe, we (as does Appellant) understand that claims 1–3, 6–9, 11, 12, and 26 now stand rejected as being obvious in view of Higuchi and Watanabe, rather than as being anticipated by Higuchi. *See* Final Act. 2, 6; Appeal Br. 13–15.

³ Claim 13 is rejected as being unpatentable over Higuchi and Watanabe. *See* Final Act. 6. We consolidate the rejections involving these two references.

⁴ Claim 28 depends directly from claim 1 and was initially rejected as being unpatentable over Higuchi. *See* Final Act. 8. However, because claim 1 is now understood as being rejected under the combination of Higuchi and

Claims 4 and 5 are rejected under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Higuchi, Watanabe, and Melvin.⁵

Claims 10, 15, 16, 18, 21, 27, and 29 are rejected under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Higuchi, Watanabe, and Isogawa.^{6, 7}

Claim 28 is rejected under pre-AIA 35 U.S.C. § 103(a) as unpatentable over Higuchi.⁸

ANALYSIS

*The rejection of claims 1–3, 6–9, 11–13, 26, and 28
as unpatentable over Higuchi and Watanabe*

Appellant argues claims 1–3, 6–9, 11, 12, and 26 together. *See* Appeal Br. 13–15. Appellant presents separate arguments for claim 13. *See* Appeal Br. 15–17. Appellant’s sole argument regarding claim 28 is that it depends from claim 1. Appeal Br. 18. We select claims 1 and 13 for

Watanabe, we understand that claim 28 is likewise rejected under this combination, and as such, is incorporated into this rejection.

⁵ Claims 4 and 5 each depend directly from claim 1. Thus, we include the Examiner’s reliance on Watanabe in rejecting claim 1 in this rejection as well.

⁶ The Examiner initially listed claims 20 and 24, but their limitations were subsequently incorporated into claim 15. *See* Ans. 2. The limitations of claim 25 were also incorporated into claim 15. *See* Ans. 2. Because claim 25 is rejected as unpatentable over Higuchi, Isogawa, and Watanabe, we (as does Appellant) understand that claims 10, 15, 21, 27, and 29 now stand rejected as being obvious in view of Higuchi, Isogawa, and Watanabe, rather than merely Higuchi and Isogawa. *See* Final Act. 5, 6; Appeal Br. 9–12.

⁷ Claims 16 and 18 are rejected as being unpatentable over Higuchi, Isogawa, and Watanabe. *See* Final Act. 7. We consolidate the rejections of these three references.

⁸ Claim 28 depends directly from claim 1. Thus, we include the Examiner’s reliance on Watanabe in rejecting claim 1 in this rejection as well.

review, with remaining claims 2, 3, 6–9, 11, 12, 26, and 28 standing or falling with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(iv).

Claim 1

The Examiner primarily relies on Higuchi for teaching the limitations of claim 1, but relies on Watanabe for teaching the limitations of incorporated claim 23, which addresses a “compression deformation amount of 4.1 mm or more and 6.0 mm or less.” *See* Final Act. 2, 3, 6, 7. The Examiner states, “[a]s to [c]laim 23, Watanabe teaches” this compression deformation range.⁹ Final Act. 7 (referencing Watanabe ¶ 31). The Examiner’s reason to provide Higuchi’s core with a hardness having the claimed compression deformation range as taught by Watanabe, is “to yield the predictable result of improving ball performance.” Final Act. 7; *see also* Watanabe ¶ 31.

Appellant contends that Higuchi “**requires**” a deformation range “of from **2.0 to 4.0 mm**” and that “[b]y modifying the golf ball of Higuchi et al. ’008 with the core hardness of Watanabe ’861, the primary reference, Higuchi et al. ’008, is rendered inoperable for its intended purpose.” Appeal Br. 14 (referencing Higuchi ¶ 64). Paragraph 64 of Higuchi discloses a deformation range of “at least 2.0 mm . . . *but not more than 4.0 mm.*” Emphasis added. This is in contrast with the recited range “of 4.1 mm or more and 6.0 mm or less” and Watanabe’s range of generally 3.0 to 6.0 mm. *See* Watanabe ¶ 31. Appellant thus argues that “the combination of Higuchi et al. ’008 and Watanabe ’861 is improper.” Appeal Br. 14. As further support, Appellant references “Table 6 and paragraph [0160] of Higuchi.”

⁹ Paragraph 31 of Watanabe discloses a range “generally from 3.0 mm to 6.0 mm.”

Appeal Br. 14. Appellant specifically addresses Example 2 in Table 6, which is the only example therein having a deflection value greater than 4.1 mm. Appellant states that Paragraph 160 of Higuchi criticizes this example and, as such, Higuchi “actually teach[es] away” from the greater range that is claimed. Appeal Br. 14.

The Examiner responds that a skilled person “would have considered the teaching of Watanabe with regard to a slightly softer core having a slightly higher compression deformation value.” Ans. 4. As indicated above, Watanabe addresses a range (3.0 to 6.0 mm) that overlaps and also exceeds Higuchi’s range of 2.0 to 4.0 mm. *See* Watanabe ¶ 31. Watanabe further addresses core deflection stating that if it is “too large, the core may lack sufficient rebound, which may result in a less than satisfactory distance.” Watanabe ¶ 31. On the other hand, Watanabe additionally states that if core deflection is too small, then “the ball may have an excessively hard feel on full shots, and the spin rate may be too high” and hence, “an increased distance may not be achieved.” Watanabe ¶ 31. Thus, we agree with the Examiner in stating, “Watanabe teaches that the range of the value for core deformation is important for optimizing distance and that the core should be neither too hard nor too soft.” Ans. 4 (referencing Watanabe ¶ 31).

Interestingly, Higuchi has similar concerns regarding a core with “too small a deformation” and also a “core that is too soft,” both of which have detrimental impact on the play, feel, spin, and/or distance of the ball. Higuchi ¶ 64; *see also* Ans. 4 (“Higuchi makes note of the same concern . . . see paragraph 0064”). In view of such similarity, the Examiner states that both references address “the issue of improving flight distance by optimizing

hardness of the core” and that a skilled person “would have considered the teaching of the references in combination.” Ans. 5.

In view of the similar, if not identical, goals of each cited reference, we do not fault the Examiner for combining the teachings of Higuchi with the core hardness values described in Watanabe. *See Medichem S.A. v. Rolabo S.L.*, 437 F.3d 1157, 1165 (Fed. Cir. 2006) (“Where the prior art contains ‘apparently conflicting’ teachings (i.e., where some references teach the combination and others teach away from it) each reference must be considered ‘for its power to suggest solutions to an artisan of ordinary skill. . . . consider[ing] the degree to which one reference might accurately discredit another.’” (quoting *In re Young*, 927 F.2d 588, 591 (Fed. Cir. 1991))).

Further, regarding Appellant’s reference to Higuchi’s Table 6, and particularly Example 2 therein, we note that Higuchi criticizes all seven examples listed in Table 6, not just Example 2. *See* Higuchi ¶ 160. Further, Examples 1–7 in Table 6 have different “Types” of solid cores than those listed in Table 5, against which the Table 6 examples are compared.^{10, 11} To be clear, Table 6 identifies a solid core “Type” as being one of Nos. 2 or 5 through 9; on the other hand, the examples in Table 5 to which Table 6 is compared (*see* Higuchi ¶ 139) comprise a solid core “Type” of Nos. 1

¹⁰ A certain “Type” number is associated with a set of solid core characteristics (i.e., diameter, deflection, and hardness distribution) with one Type number pertaining to different characteristics than another.

¹¹ Paragraph 139 of Higuchi states:

The golf balls obtained in above Examples 1 to 9 and Comparative Examples 1 to 7 were each evaluated for ball deflection, ball properties, flight performance, spin rate on approach shots, scuff resistance and feel on impact. The results are shown in Tables 5 and 6.

through 5. In short, the two tables employ different “Types” of solid cores, afterwhich Higuchi criticizes all the Table 6 examples. *See* Higuchi ¶ 160. In a final analysis, Higuchi rates Table 6’s Example 2 as “Good” and thus equal or better than those in Table 5 (which range between “Ordinary” and “Good”).

Thus, in view of the above, we are not persuaded the Examiner erred in combining Higuchi and Watanabe, or that their combination renders Higuchi’s device “inoperable for its intended purpose.” Appeal Br. 14. Nor are we persuaded that the language identified by Appellant (*see* Higuchi ¶¶ 64, 160) is such that Higuchi can be said to teach away from the overlapping and higher deformation values disclosed in Watanabe. *See* Appeal Br. 15. Accordingly, we sustain the Examiner’s rejection of claims 1–3, 6–9, 11, 12, 26, and 28 as being unpatentable over Higuchi and Watanabe.

Claim 13

Claim 13 depends, ultimately, from claim 1 and recites measuring a hardness at multiple points along a radius of the core, and plotting these hardness values against distance, so that “ R^2 of a linear approximation curve obtained from a least square method is 0.90 or higher.” Appellant acknowledges that the Examples in Higuchi result in R^2 values both above and below this 0.90 value. *See* Appeal Br. 16 (“ **R^2 is about 0.80**”), 17 (“ R^2 of 0.95 or higher”). With respect to those examples whose values are higher than 0.90 as recited, Appellant contends that Higuchi “do[es] NOT meet the claimed limitation of ‘the spherical core has a hardness difference between a surface hardness and a center hardness of 25 or more and 80 or less,’” which is a claim 1 limitation.

The Examiner relied on Higuchi Paragraph 71 for this claim 1 limitation. *See* Final Act. 2. Paragraph 71 teaches Shore D hardness differences “between the surface and center of the solid core” as having values as low as 20 and as high as 50, but preferably somewhere in-between.¹² *See* Higuchi ¶ 71. Hence, we are not persuaded that Higuchi fails to disclose hardness differences “of 25 or more and 80 or less” as recited.

Appellant additionally contends, “Higuchi ’861 teach[es] away from a steadily increasing linear core hardness profile as disclosed by Watanabe ’861.” Appeal Br. 16. However, Paragraph 29 of Watanabe clearly addresses JIS-C hardness values at different locations along the core’s radius stating the “parameter serves in the inventive golf ball as an indicator showing that the hardness has a slope at which it increases linearly from the core center to the core surface.” Such a slope is consistent with Appellant’s Figures 2–14. Accordingly, Appellant’s “teaching away” argument is not persuasive when Watanabe clearly provides the same disclosure. In other words, we are not persuaded the Examiner erred in rejecting claim 13 as being obvious in view of Higuchi and Watanabe. We sustain the Examiner’s rejection of claim 13.

*The rejection of claims 4 and 5
as unpatentable over Higuchi, Watanabe, and Melvin*

Claims 4 and 5 depend from claim 1. Appellant does not argue patentability based on the additional limitations recited in claims 4 and 5, but

¹² Additionally, Watanabe states, “the hardness differences between the core center and the core surface in JIS-C units being at least 15, preferably from 16 to 40, and more preferably from 18 to 35.” Watanabe ¶ 28.

instead merely contends that “Melvin et al. ’562 do not overcome the deficiencies” of Higuchi and Watanabe. Appeal Br. 9. Because Appellant has not apprised us of any such deficiencies as discussed above, we sustain the Examiner’s rejection of claims 4 and 5 as being obvious over Higuchi, Watanabe, and Melvin.

*The rejection of claims 10, 15, 16, 18, 21, 27, and 29
as unpatentable over Higuchi, Watanabe, and Isogawa*

Regarding claim 10, “Appellants submit that Isogawa et al. ’991 do not overcome the deficiencies of” Higuchi and Watanabe. Appeal Br. 9. We sustain the Examiner’s rejection of claim 10.

Regarding claims 15, 21, 27, and 29, Appellant argues these claims together. *See* Appeal Br. 9–12. We select independent claim 15 for review. Appellant’s argument regarding this independent claim mirror those provided above regarding independent claim 1. For example, Appellant acknowledges the rejection is based upon the combination of Higuchi and Watanabe when addressing claim 15’s similar limitation of “a compression deformation amount of from **4.1 mm to 6.0 mm.**” Appeal Br. 10. Appellant also argues, “the combination of references cannot change the principle of operation of the primary reference or render the reference inoperable for its intended purpose.” Appeal Br. 11. Appellant’s repeat of such arguments are not persuasive for the reasons previously expressed.

Appellant additionally argues that, “as evidenced by the comparative testing in the present specification, the claimed invention achieves unexpectedly superior results due to the inclusion of component (e).” Appeal Br. 12. Component (e) of claim 15 is a reference to employing “2,6-dichlorothiophenol and/or a metal salt thereof as an organic sulfur

compound, and a filler.” Appellant does not explain how the results of using component (e) are *unexpectedly* superior; Appellant merely asserts it to be so. *Id.* Further, the Examiner relies on an explicit teaching of this feature by Isogawa. *See* Final Act. 6 (referencing the rejection of claim 10, which contains a similar limitation and relying on Paragraph 64 of Isogawa for disclosing its chemical synonym). The Examiner states that it would have been obvious “to provide Higuchi with a known suitable substitute organic sulfur compound” as this component (e). Final Act. 6. Appellant does not dispute the Examiner’s findings on this point. Accordingly, we affirm the Examiner’s rejection of claims 15, 21, 27, and 29.

Regarding claims 16 and 18, Appellant again repeats arguments previously presented, which were not persuasive the first time. *See* Appeal Br. 17–18.

Accordingly, we sustain the Examiner’s rejection of claims 10, 15, 16, 18, 21, 27, and 29 as unpatentable over Higuchi, Watanabe, and Isogawa.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 6–9, 11–13, 26, 28	103(a)	Higuchi, Watanabe	1–3, 6–9, 11–13, 26, 28	
4, 5	103(a)	Higuchi, Watanabe, Melvin	4, 5	
10, 15, 16, 18, 21, 27, 29	103(a)	Higuchi, Watanabe, Isogawa	10, 15, 16, 18, 21, 27, 29	
Overall Outcome			1–13, 15, 16, 18, 21, 26–29	

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

AFFIRMED