

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LANE D. LEMONS, FRANK M. SIMONUTTI,
and ROBERT T. THURMAN

Appeal 2008-2808
Application 10/752,634¹
Technology Center 3700

Decided: June 5, 2008

Before DONALD E. ADAMS, LORA M. GREEN, and
RICHARD M. LEOVITZ, *Administrative Patent Judges*.

ADAMS, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal under 35 U.S.C. § 134 involves claims 1, 3-5, 8-11, and 69-75. The only pending claims remaining in the application (claims 12-68) “have been withdrawn from consideration” (App. Br. 2). We have jurisdiction under 35 U.S.C. § 6(b).

¹ This application is the parent of divisional Application No. 11/078,755, Appeal No. 2008-2141.

The rejections as presented by the Examiner are as follows:

1. Claims 70 and 73 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.
2. Claims 1 and 8-11 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Miller.²
3. Claims 69-75 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Miller.
4. Claims 3-5 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Miller and Farrally.

We reverse the indefiniteness rejection and affirm the prior art rejections.

DISCUSSION

Claims Interpretation:

Claim 1:

Claim 1 is drawn to a golf ball core. The core of claim 1 comprises three components:

1. a polybutadiene rubber having a high-cis isomer content;
2. a co-crosslinking agent; and
3. a free radical initiator.

Claim 1 requires that the co-crosslinking agent comprises a zinc salt of an unsaturated acrylate ester; wherein the zinc salt is zinc diacrylate.

Accordingly, while the co-crosslinking agent is open to include any number

² The Examiner included claims 69-75 in this rejection and then rejects claims 69-75 in a separate rejection under 35 U.S.C. § 103(a) over Miller. Accordingly, we do not include claims 69-75 in this rejection. Instead, we address these claims in their separate rejection over Miller.

Appeal 2008-2808
Application 10/752,634

of materials it must contain a zinc salt of an unsaturated acrylate ester. Claim 1 defines this zinc salt as zinc diacrylate. Therefore, we interpret claim 1 to require that the only zinc salt of an unsaturated acrylate ester present in the co-crosslinking agent is zinc diacrylate. This interpretation is consistent with Appellants' Specification (*see e.g.*, Spec. ¶ 0033: Table 1 and ¶ 0053: Table 5).

Appellants' Specification identifies a number of free radical initiators, including peroxide (Spec. 7). Accordingly, we interpret the free radical initiator of claim 1 to be peroxide.

Claim 1 requires that the golf ball core has a compression of less than zero. However, claim 1 requires that the compression value is obtained by conversion from a deflection value taken under an applied static load of 200 lb.

As discussed above, the body of claim 1 defines the composition of the core. The preamble of claim 1 sets forth the intended use of the core as for a three or more piece golf ball. Where, as here, "a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention, the preamble is not a claim limitation." *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997). Accordingly, we find that the preamble does not limit the golf ball core as defined by the body of claim 1.

Claim 3:

Claim 3 depends from claim 1 and further limits the polybutadiene cis-isomer content of the core to at least about 94%.

Claim 69:

Claim 69 depends from and further limits claim 1 to further comprise a quantity of zinc diacrylate within the range of 10 Phr to 20 Phr.

Claim 70:

Claim 70 depends from 69 and further limits the quantity of zinc diacrylate to 10 Phr.

Findings of Fact (FF):

1. Appellants' Specification provides examples of core formulations comprising 10, 15, 17.5, and 20 Phr of zinc diacrylate (Spec. 12: Table 1 and 19: Table 5).
2. Miller teaches a golf ball that is formed, *inter alia*, "by molding a center of a homogenous mass of polybutadiene with a metal salt of an unsaturated acid such as zinc dimethacrylate and a filler such as zinc oxide" (Miller Abstract; Ans. 4).
3. Miller teaches that the preferred elastomer "is cis-polybutadiene rubber of at least about 40% cis configuration" (Miller 3: 31-33; Ans. 4). More specifically, Miller exemplifies the use of 98% cis-polybutadiene (Miller 11: 62-63).
4. Miller teaches a number of different co-crosslinking agents, including zinc diacrylate (Miller 4: 54-55; Ans. 4).
5. Miller teaches that

[m]ixtures of different metal-containing monomers may be used to advantage for the purpose of adjusting the polymerization rate or the final density of the ball. . . . For example, zinc diacrylate when used as the sole metal-containing monomer polymerizes vary [sic] rapidly during curing, making the curing operation excessively exothermic and difficult to control Thus, it may be advantageous to use mixtures of zinc diacrylate and

zinc dimethacrylate in order to achieve a better balance of ease of processing, and final characteristics of the ball.

(Miller 4: 47-60.)

6. Miller teaches the use of free radical initiators, which decompose to produce free radicals during the cure cycle, including peroxides (Miller 4: 49-62: Ans. 5).

7. Miller teaches that “[t]he term ‘metal-containing polymerizable monomers’ as employed herein includes such monomers which have been at least partially prepolymerized before compounding, or after compounding or process, and before curing” (Miller 5: 11-15). According to Miller “[a]n advantage of using such prepolymerized cross-linking salts is that the amount of heat generated when the ball is cured is minimized, in contrast to using unpolymerized monomers. The reduced exotherm makes the molding operation more easily controlled” (Miller 5: 21-25).

8. Miller teaches that an antioxidant may be added to the compound to, *inter alia*, prevent “excessive temperature build up during molding of the center” (Miller 6: 63-68).

9. Miller teaches that “[t]he amount of the metal-containing cross-linking monomer should correspond to at least about 0.046 equivalent of polymerizable unsaturation per mole of butadiene in the elastomer base, but may be as high as about 0.38 equivalent per mole” (Miller 5: 26-30).

According to Miller “if the cross-linking monomer selected is zinc dimethacrylate, more preferable amounts are in the range of about 15 to 35 parts of zinc dimethacrylate phr” (Miller 5: 33-36).

10. Miller teaches that

[t]he term “Compression” in the golf ball industry relates to an arbitrary value expressed by a number which can range from 0

to over 100, and that defines the deflection that a golf ball undergoes when subjected to a compressive loading. The specific test is made in an apparatus fashioned in the form of a small press with an upper and a lower anvil. The upper anvil is at rest against a 200-pound die spring, and the lower anvil is movable through 0.300 inches by means of a crank mechanism. . . . As the lower anvil is raised by the crank, it compresses the ball against the upper anvil, such compression occurring during the last 0.200 inches of stroke of the lower anvil, the ball then loading the upper anvil which in turn loads the spring. The equilibrium point of the upper anvil is measured by a dial micrometer if the anvil is deflected by the ball more than 0.100 inches (less deflection is simply regarded as zero compression) and the reading on the micrometer dial is referred to as the compression of the ball.

(Miller 10: 53 - 11: 4.)

11. Miller teaches that “tournament quality balls have compression ratings around 90 or 100 which means that the upper anvil was deflected a total of 0.190 or 0.200 inches” (Miller 11: 6-9).

Definiteness:

1. Claims 70 and 73 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claims 70 and 73 depend from claim 69, which depends from claim 1. The Examiner correctly finds that

- a. claim 69 recites the quantity of zinc diacrylates is within the range of 10 Phr to 20 Phr (Ans. 4);
- b. claim 70 requires that the quantity of zinc diacrylate is 10 Phr (*id.*); and
- c. claim 73 requires that the quantity of zinc diacrylate is 20 Phr (*id.*).

Appeal 2008-2808
Application 10/752,634

Based on these findings, the Examiner concludes that claims 70 and 73 lack antecedent basis since “the range in claim 69 does not include the usage of 10 and 20 Phr” (*id.*). According to the Examiner “[i]f the applicant wants 10 and 20 to be included into the range of claim 69, applicant should delete[] [the term] ‘within’ from claim 69” (*id.*).

In support of this rejection, the Examiner directs attention to the definition of the term “within”, which as defined by Merriam-Webster means “inside” (Ans. 7). Therefore, the Examiner reasons, since “within” means “inside”, the phrase “‘within a range of 10 to 20 P[hr]’ . . . would be interpreted as ‘inside a range of 10 to 20 P[hr] . . . [which] would exclude 10 and 20 from being a value covered by the range” (*id.*).

Thus, the issue before this panel is whether the phrase “within the range of 10 Phr to 20 Phr” includes the lower and upper limits of 10 Phr and 20 Phr.

Claims are in compliance with 35 U.S.C. § 112, second paragraph, if “the claims, read in light of the specification, reasonably apprise those skilled in the art and are as precise as the subject matter permits.” *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1385 (Fed. Cir. 1987).

According to Appellants, when the claims are read in light of their Specification it is clear that “the term ‘within’ . . . includes values between 10 and 20 as well as the actual values of 10 and 20” as these are part of the claimed range (App. Br. 3). We agree, *see* FF 1.

Accordingly we reverse the rejection of claims 70 and 73 under 35 U.S.C. § 112, second paragraph, as being indefinite.

Obviousness:

2. Claims 1 and 8-11 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Miller.

The claims have not been argued separately and therefore stand or fall together. 37 C.F.R. § 41.37(c)(1)(vii). Therefore, we limit our discussion to representative claim 1.

The Examiner finds that Miller teaches a golf ball core “comprising a polybutadiene of at least 40% cis isomer content, which encompasses having a high-cis isomer content, a co-crosslinking agent comprising a zinc diacrylate and a free radical initiator” (Ans. 4-5; FF 2-6). The Examiner finds that Miller “does not explicitly disclose the compression being zero when using a zinc diacrylate” (Ans. 5). To make up for this deficiency the Examiner directs attention to Miller’s Example 4 (which teaches the use of, *inter alia*, methacrylic acid and zinc oxide) to teach a core with a compression of zero (*id.*). In addition, the Examiner also finds that Miller teaches “that the filler, zinc oxide, may act as both a cross-linking agent and a filler (*id.*). In addition, the Examiner interprets claim 1 as open to include both zinc diacrylate and zinc dimethacrylate (Ans. 9).

Based on this evidence, the Examiner concludes that “[o]ne having ordinary skill in the art would have found it obvious to have a zinc salt of an acrylic ester, as taught by Miller et al., in order to optimize the density of the core” (Ans. 5.). More specifically, the Examiner interprets claim 1 as open to include both zinc diacrylate and zinc dimethacrylate (Ans. 9). We disagree.

Claim 1 requires, *inter alia*, that the co-crosslinking agent comprises a zinc salt of an unsaturated acrylate ester. Therefore, while any number of ingredients can be present in this co-crosslinking agent it must have a zinc

Appeal 2008-2808
Application 10/752,634

salt of an unsaturated acrylate ester. The question, however, is what are the requirements in claim 1 for this zinc salt of an unsaturated acrylate ester? Stated differently, does claim 1 permit the zinc salt of an unsaturated acrylate ester to be a mixture of zinc salts? We think not. One need look no further than claim 1 to find the answer. Claim 1 expressly requires that the zinc salt of an unsaturated acrylate ester component of the co-crosslinking agent is zinc diacrylate.

Therefore, we disagree with the Examiner's interpretation of the claim to read on more than one zinc salt of an unsaturated acrylate ester that includes zinc diacrylate and some other zinc salt (e.g., zinc dimethacrylate). Such an interpretation ignores the express language of claim 1 which states "the zinc salt being zinc diacrylate" (Claim 1).

Miller does, however, teach the use of zinc diacrylate as a co-crosslinking agent in the formulation of a golf ball core (FF 4). While Miller explains that the use of zinc diacrylate alone may result in a curing operation that is excessively exothermic and difficult to control (FF 5), Miller does not teach that the use of zinc diacrylate alone would not work. To the contrary, Miller simply states that "*it may be advantageous* to use mixtures of zinc diacrylate and zinc dimethacrylate in order to achieve a better balance of ease of processing and final characteristics of the ball" (FF 5 (emphasis added)). "Under the proper legal standard, a reference will teach away when it suggests that the developments flowing from its disclosures are unlikely to produce the objective of applicant's invention. A statement that a particular combination is not a preferred embodiment does not teach away absent clear discouragement of that combination." *Syntex (USA) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1380 (Fed. Cir. 2005) (citations deleted). Accordingly, we

Appeal 2008-2808
Application 10/752,634

do not find that Miller teaches away from the use of zinc diacrylate in the absence of zinc dimethacrylate.

In this regard, we note that Miller teaches the use of metal-containing polymerizable monomers, e.g., zinc diacrylate, which have been “at least partially prepolymerized before compounding, or after compounding or process, and before curing” to reduce heat generated during curing thereby making the molding operation more easily controlled (FF 7). In addition Miller teaches that antioxidants may be added to the core composition to prevent excessive temperature build up during molding (FF 8).

Accordingly, we disagree with Appellants assertion that according to Miller zinc diacrylate “would only be used in combination with zinc dimethacrylate” (App. Br. 8).

In addition, we are not persuaded by Appellants arguments with regard to the preamble (App. Br. 5-7). As discussed above, we do not find the intended use of the core for a three or more piece golf ball to represent a positive limitation on the claimed invention. In order to establish unexpected results for a claimed invention, objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support. *In re Greenfield*, 571 F.2d 1185, 1189 (CCPA 1978); *In re Lindner*, 457 F.2d 506, 508 (1972); *In re Tiffin*, 448 F.2d 791, 792 (1971). Accordingly, we are not persuaded by Appellants’ arguments regarding a golf ball comprising a core, mantle, and cover.

Nevertheless, we recognize Appellants’ assertion that “existing golf ball cores are not formed with a compression value below 35” (App. Br. 6). We disagree. Miller exemplifies golf ball cores with compression values of 24 and 0 (Miller 12: 40-41 and 65 respectively).

Appellants' claim requires that the "core has a compression of less than zero when converted from a deflection value taken under an applied static load of 200 lb" (Claim 1). Appellants' Specification provides an example of a core having a deflection of greater than 0.160 inches under an applied static load of 200 lb (Spec. 6: ¶ 0017). In this example, Appellants' Specification explains that by "[u]sing a generally accepted conversion of deflection to compression (Compression = 160 – (Deflection*1000)) the defined deflection equates to a compression of zero (or less) compression" (*id.*; see also App. Br. 6). There is no evidence on this record to support a finding that Miller's golf ball cores exhibiting a compression of 24 and 0 do not fall within the scope of Appellants' claimed compression value, when converted from a deflection value according to the formula provided in Appellants' Specification.

We recognize, however, that to obtain these compression values Miller utilized zinc dimethacrylate (Miller 12: 40-41 and 65; *see also* App. Br. 7). Thus, the only question is whether one of ordinary skill in the art would have expected to observe similar compression values utilizing a core composition comprising zinc diacrylate? Appellants do not address this issue. "Express suggestion to substitute one equivalent for another need not be present to render such substitution obvious." *In re Fout*, 675 F.2d 297, 301 (CCPA 1982); *see also In re Mayne*, 104 F.3d 1339, 1340 (Fed. Cir. 1997) ("Because the applicants merely substituted one element known in the art for a known equivalent, this court affirms [the rejection for obviousness]."). *Accord KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1740 (2007) ("when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result").

There is no evidence on this record to suggest that a person of ordinary skill in this art reading Miller and interested in utilizing zinc diacrylate, instead of zinc dimethacrylate, would have utilized a different concentration of zinc diacrylate than was used for zinc dimethacrylate. In this regard, we note that Miller teaches that “[t]he amount of the metal-containing cross-linking monomer should correspond to at least about 0.046 equivalent of polymerizable unsaturation per mole of butadiene in the elastomer base, but may be as high as about 0.38 equivalent per mole” (FF 9). Accordingly, absent evidence to the contrary, of which there is none, we find that a person of ordinary skill in the art would have reasonably expected that the substitution of zinc diacrylate for zinc dimethacrylate in the concentration range taught by Miller would have resulted in similar core compression values.

On reflection, we find that the Examiner has set forth a plausible prima facie case of obviousness. Accordingly, the burden of coming forward with evidence or argument was properly shifted to Appellants. *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993). For the foregoing reasons, we find that Appellants failed to carry their burden. Accordingly, we affirm the rejection of claim 1 under 35 U.S.C. § 103(a) as unpatentable over Miller. Claims 8-11 fall together with claim 1.

3. Claims 69-75 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Miller.

The claims have not been argued separately and therefore stand or fall together. 37 C.F.R. § 41.37(c)(1)(vii). Therefore, we limit our discussion to representative claim 69.

According to the Examiner, Miller “discloses the quantity of zinc diacrylate being about 15 to 35 Phr (See Column 5, lines 26 through 36)” (Ans. 6). However, as Appellants correctly point out, “Col. 5, lines 26-36, of Miller et al. discloses 15 to 35 Phr of zinc dimethacrylate” not zinc diacrylate (App. Br. 9 (emphasis removed); FF 9). Nevertheless, as discussed above, Miller teaches that “[t]he amount of the metal-containing cross-linking monomer should correspond to at least about 0.046 equivalent of polymerizable unsaturation per mole of butadiene in the elastomer base, but may be as high as about 0.38 equivalent per mole” (FF 9). There is no evidence, or argument, to suggest that such a concentration of zinc diacrylate described by Miller would not overlap, or encompass, zinc diacrylate within the claimed range of 10 Phr to 20 Phr. Further, there is no evidence on this record to suggest that a person of ordinary skill in the art would not utilize the same concentration of zinc diacrylate as was used for zinc dimethacrylate, specifically 15 to 35 Phr (FF 9), with the expectation of obtaining golf ball cores with compression values of 24 and 0 (Miller 12: 40-41 and 65 respectively).

Further, for the reasons set forth above, we disagree with Appellants’ assertion that “any zinc diacrylate used in Miller et al. would only be used in combination with zinc dimethacrylate” (App. Br. 9-10 (emphasis removed)).

Accordingly, in the absence of evidence to the contrary, which there is none, we affirm the rejection of claim 69 under 35 U.S.C. § 103(a) as unpatentable over Miller. Claims 70-75 fall together with claim 69.

4. Claims 3-5 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Miller and Farrally.

Appeal 2008-2808
Application 10/752,634

The claims have not been argued separately and therefore stand or fall together. 37 C.F.R. § 41.37(c)(1)(vii). Therefore, we limit our discussion to representative claim 3.

According to the Examiner, Miller “does not disclose the cis-content of at least 94%” (Ans. 6). We disagree (*see* FF 3). Nevertheless, the Examiner relies on Farrally to teach “that the cis- content is based upon the type of catalyst used. Farrally et al. further discloses that higher cis- content equates to higher resilience” (Ans. 6).

In response, Appellants’ assert that neither Miller nor Farrally alone or in combination, teach, suggest or disclose a golf ball core for a three-or-more-piece golf ball, wherein the core includes a co-crosslinking agent comprising zinc diacrylate, and wherein the core has a compression of less than zero when converted from a deflection value taken under an applied static load of 200 lb.

(App. Br. 10.)

For the reasons set forth above, we disagree with Appellants’ assertion. Accordingly, we affirm the rejection of claim 3 under 35 U.S.C. § 103(a) as unpatentable over Miller and Farrally. Claims 4 and 5 fall together with claim 3.

CONCLUSION

In summary, we reverse the indefiniteness rejection and affirm the prior art rejections.

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

AFFIRMED

Appeal 2008-2808
Application 10/752,634

dm

Wilson Sporting Goods Co.
8750 W. Bryn Mawr Ave.
Chicago, IL 60631