

UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte MARK S. ROBY,
JOHN J. KENNEDY, and RICHARD STEVENSON

Appeal 2008-3143
Application 10/103,187
Technology Center 3700

Decided: November 17, 2008

Before DONALD E. ADAMS, LORA M. GREEN, and
FRANCISCO C. PRATS, *Administrative Patent Judges*.

GREEN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-12, 16, 17, and 19-23. We have jurisdiction under 35 U.S.C. § 6(b).

STATEMENT OF THE CASE

The claims are directed to polyolefin sutures and methods of making such sutures, wherein the sutures contain a fray reducing amount of a fatty acid diester of polyethylene glycol. Claims 1, 16, 20, and 21 are representative of the claims on appeal, and read as follows:

1. A method for fabricating a polyolefin suture comprising:
 - a) providing a melt of at least one polyolefin, the melt containing a fatty acid diester of polyethylene glycol; and
 - b) extruding the melt to form a filament.

16. A suture comprising a filament comprising a mixture of polyolefin and fray reducing amount of a fatty acid diester of polyethylene glycol, wherein the fatty acid diester comprises from 0.01% to 5.0% by weight of the filament.

20. A device comprising:
 - a needle; and
 - a sterilized monofilament attached to the needle, the monofilament comprising a mixture of polypropylene and 0.1% to 0.5% by weight polyethylene glycol distearate.

21. A suture comprising: a filament comprising a polyolefin and a fray reducing amount of a fatty acid diester of polyethylene glycol, wherein the fatty acid diester comprises from 0.01% to 5.0% by weight of the filament.

The Examiner relies on the following references:

Singerman	US 3,311,110	Jul. 15, 1964
Yokohama	US 3,625,931	Dec. 7, 1971
Ruter	US 3,821,184	Jun. 28, 1974
Mattei	US 4,201,216	May 6, 1980
Chesterfield	US 5,059,213	Oct. 22, 1991
Everhart	US 5,439,734	Aug. 8, 1995
Kojima	US 5,902,679	May 11, 1999
Birnbrich	US 2002/0019184 A1	Feb. 14, 2002

We affirm.

ISSUE (Anticipation)

The Examiner finds that Birnbrich anticipates the claimed sutures and methods of producing the sutures of claims 1, 9, 12, 16, 17, 19, and 21; that Everhart anticipates the claimed sutures and methods of producing the sutures of claims 1, 9, 12, 16, 17, and 21; and Kojima anticipates the suture of claims 21-23.

Appellants contend that Birnbrich, Everhart, and Kojima do not anticipate the claimed suture and methods of producing the sutures. Appellants' primary contention is that none of the references are drawn to sutures or to methods of producing sutures. As to Everhart, Appellants contend further that Everhart does not disclose adding a fray reducing amount of the fatty acid diester of polyethylene glycol. Finally, as to Kojima, Appellants argue that Kojima does not incorporate the fatty acid diester of polyethylene glycol into the fiber itself.

Thus, we frame the issues as to the anticipation rejections as follows:

1) Have Appellants demonstrated that the Examiner erred in rejecting the claims over references that do not specifically teach sutures and methods of making the sutures; 2) Have Appellants demonstrated that the Examiner erred in rejecting certain of the claims over Everhart because Everhart does not disclose adding a fray reducing amount of the fatty acid diester of polyethylene glycol; and 3) Have Appellants demonstrated that the Examiner erred in rejecting certain of the claims over Kojima as Kojima

does not incorporate the fatty acid diester of polyethylene glycol into the fiber itself?

FINDINGS OF FACT

FF1 The Specification teaches that “[p]olyolefin sutures are known in the art.” (Spec. 1.)

FF2 According to the Specification:

It has now been found that the processing and handling characteristics of polyolefin sutures can be improved by incorporating a fatty acid diester of polyethylene glycol into the polyolefin resin prior to spinning of the filament(s). A method for fabricating a polyolefin suture is also provided herein. In the novel method described herein, a polyolefin is combined with an effective fray reducing amount of a fatty acid diester of polyethylene glycol, preferably polyethylene glycol distearate. The mixture of polyolefin and diester is heated to form a melt. The melt is then extruded to form a filament. The polyolefin is preferably polypropylene.

(*Id.* at 2.)

FF3 The Examiner rejects claims 1, 9, 12, 16, 17, 19, and 21 under 35 U.S.C. § 102(b) as being anticipated by Birnbrich (Ans. 4).

FF4 The Examiner cites Birnbrich for disclosing “a fiber of polypropylene and a fatty acid diester of PEG,” and also for teaching that “the materials are mixed, heated and spun into fibers.” (*Id.*)

FF5 Specifically, one aspect of Birnbrich “relates to a process for making a synthetic fiber having increased hydrophilicity comprising the steps of: (1) adding an effective amount of a di-C₁₀₋₁₂ fatty acid ester of polyethylene glycol to a polymer to form a mixture; (2) heating the mixture to form a

melt; and (3) spinning the melt into a fiber.” (Birnbrich ¶ 9.) The polymer is preferably a polyolefin, such as polypropylene (*id.* at ¶ 13.) “Typically, the amount of the additive required to increase the hydrophilicity of a polymer will be from about 0.5% to about 10% by weight of the polymer, preferably the amount will be from about 0.5% to about 5% by weight and most preferably from about 1.0% to about 2.5%.” (*Id.* at ¶16.)

FF6 Thus, Birnbrich teaches the steps of “providing a melt of at least one polyolefin, the melt containing a fatty acid diester of polyethylene glycol,” and “extruding the melt to form a filament” (claim 1), as well as the filament formed by the process (claim 12). Birnbrich also teaches a filament comprising a mixture of polyolefin and a fatty acid diester of polyethylene glycol, wherein the fatty acid diester comprises from 0.01% to 5.0% by weight of the filament (claims 16 and 21).

FF7 The Examiner rejects claims 1, 9, 12, 16, 17, and 21 under 35 U.S.C. § 102(b) as being anticipated by Everhart (Ans. 4).

FF8 According to the Examiner, Everhart teaches “a fiber made out of polypropylene and a fatty acid diester of PEG.” (*Id.*)

FF9 Everhart discloses a fiber formed from a polyolefin with a fatty acid diester (col. 1, ll. 53-68). Everhart teaches that any polyolefin that can be fiberized may be used, including polypropylene (col. 2, ll. 54-60). Everhart also discloses an example wherein 1% of a dioleate ester of polyethylene oxide is added to a polypropylene fiber (col. 4, Example 1).

FF10 Thus, Everhart teaches the steps of “providing a melt of at least one polyolefin, the melt containing a fatty acid diester of polyethylene glycol,” and “extruding the melt to form a filament” (claim 1), as well as the filament

formed by the process (claim 12). Everhart also teaches a filament comprising a mixture of polyolefin and a fatty acid diester of polyethylene glycol, wherein the fatty acid diester comprises from 0.01% to 5.0% by weight of the filament (claims 16 and 21).

FF11 The Examiner rejects claims 21-23 under 35 U.S.C. § 102(b) as being anticipated by Kojima (Ans. 3).

FF12 According to the Examiner, Kojima teaches “a fiber (which could be used as a suture) including a polypropylene fiber and PEG distearate.” (*Id.*)

FF13 Specifically, Kojima teaches:

A low-temperature adhesive fiber, characterized in that a textile oil in an amount of 0.1-2.0% by weight per fiber, which comprises the following surfactant composition of 5-15% by weight of the following component (A), 5-45% by weight of the following component (B) and 40-90% by weight of the following component (C), is applied to a conjugate fiber of polyolefins having a core component of polypropylene and a sheath component of a bipolymer or terpolymer of olefins mainly containing propylene.

(A) at least one alkali metal alkyl sulfonate,

(B) at least one compound selected from polyol esters and fatty acid alkanol amides,

(C) at least one compound selected from dibasic acid esters and polyethylene glycol esters.

(col. 2, ll. 24-37.)

FF14 Kojima specifically exemplifies the use of PEG distearate as component C (col. 8, Table 1).

FF15 The textile oil is in an amount of 0.1 to 2.0% weight per fiber, and the textile oil may be from 40% to 90% of the textile oil. Thus, component C,

such as PEG distearate, may comprise .04% (40% of 0.1%) to 1.8% (90% of 2.0%) of the fiber.

FF16 Thus, Kojima teaches a filament comprising a polyolefin and a fatty acid diester of polyethylene glycol, wherein the fatty acid diester of polyethylene glycol comprises from 0.01% to 5.0% by weight of the filament (claim 21).

PRINCIPLES OF LAW

In order for a prior art reference to serve as an anticipatory reference, it must disclose every limitation of the claimed invention, either explicitly or inherently. *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997). “When the claimed compositions are not novel they are not rendered patentable by recitation of properties, whether or not these properties are shown or suggested in the prior art.” *In re Spada*, 911 F.2d 705, 709 (Fed. Cir. 1990).

Moreover, anticipation has been found even when a prior art range “does not exactly correspond to [the] claimed range,” but the prior art “range entirely encompasses, and does not significantly deviate from, [the] claimed ranges.” *See Perricone v. Medicis Pharm. Corp.*, 432 F.3d 1368, 1377 (Fed. Cir. 2005) (court found that a claimed range of 0.025 to 5% did not significantly deviate from a prior art range of 0.01 to 20%).

As to claim construction, our mandate is to give claims their broadest reasonable interpretation. *In re American Academy Of Science Tech Center*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). “An essential purpose of patent examination is to fashion claims that are precise, clear, correct, and unambiguous. Only in this way can uncertainties of claim scope be

removed, as much as possible, during the administrative process.” *In re Zletz*, 893 F.2d 319, 322 (Fed. Cir. 1989).

With regard to a claim preamble,

[i]f the claim preamble, when read in the context of the entire claim, recites limitations of the claim, or, if the claim preamble is “necessary to give life, meaning, and vitality” to the claim, then the claim preamble should be construed as if in the balance of the claim. . . . If, however, the body of the claim fully and intrinsically sets forth the complete invention, including all of its limitations, and the preamble offers no distinct definition of any of the claimed invention’s limitations, but rather merely states, for example, the purpose or intended use of the invention, then the preamble is of no significance to claim construction because it cannot be said to constitute or explain a claim limitation.

Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d 1298, 1305 (Fed. Cir. 1999).

ANALYSIS

Claim 1 is drawn to “[a] method for fabricating a polyolefin suture comprising: a) providing a melt of at least one polyolefin, the melt containing a fatty acid diester of polyethylene glycol; and b) extruding the melt to form a filament.” The recitation of “[a] method for fabricating a polyolefin suture” in the preamble is merely a recitation of the intended use of the fiber fabricated by the method, as it does not impart additional process steps to the method, nor does it impart any additional structure to the fiber formed. Similarly, the recitation of “suture” in claims 16, 21, 22, and 23, is also a statement of the intended use of the claimed filament, as no structure is imparted to the filament by the recitation of “suture” in the preamble.

(*See also* Ans. 9) As noted by the Examiner, “[i]f someone took a fishing line and used it to sew up a wound in an emergency, it would in essence be a suture at that point. The structure has not changed.” (*Id.*)

Appellants argue that Birnbrich does not discuss sutures, nor does the reference discuss methods for fabricating sutures (App. Br. 11). As to claims 16, 17, 19, and 21, Appellants argue that Birnbrich does not disclose a filament “wherein the fatty acid diester comprises from 0.01% to 5.0% by weight of the filament.” (*Id.*)

As noted above, the fact that Birnbrich does not discuss sutures or methods for their fabrication is not relevant to the anticipation analysis, as the recitation of suture by independent claims 1, 16, and 21 is merely a statement of intended use, and not a patentable limitation. As Appellants do not argue claims 9 and 12 separately from claim 1, those claims stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(vii). Thus, the rejection is affirmed as to claims 1, 9, and 12. Note that this same analysis is applicable to the anticipation rejections over Everhart and Kojima.

As to claims 16, 17, 19, and 21, Birnbrich teaches that the amount of the additive required to increase the hydrophilicity of a polymer will be from about 0.5% to about 10% by weight of the polymer, preferably the amount will be from about 0.5% to about 5% by weight, and most preferably from about 1.0% to about 2.5%. Thus, Birnbrich teaches the required amount of the fatty acid diester, and the rejection is also affirmed as to claims 16, 17, 19, and 21.

As to the rejection over Everhart Appellants assert, Everhart does not discuss adding “a fray reducing amount of a fatty acid diester of

polyethylene glycol.” (App. Br. 9.) As to claim 9, Appellants argue that Everhart does not disclose using polypropylene as the polyolefin (*id.*). As to claims 16, 17, and 21, Appellants argue further that Everhart does not disclose a filament “wherein the fatty acid diester includes from 0.01% to 5.0% by weight of the filament.” (*Id.*)

Everhart discloses an example wherein 1% of a dioleate ester of polyethylene oxide is added to a polypropylene fiber (FF9). That amount of a fatty acid diester of polyethylene glycol falls within the range of a fatty acid diester of polyethylene glycol encompassed by the claims of 0.01% to 5.0% by weight (*see* claims 3, 16, and 21). Thus, the amount added by Everhart would inherently be a fray reducing amount, and the rejection is affirmed as to claims 1, 9, and 12. In addition, as 1.0% falls within the claimed range of 0.01% to 5.0%, the rejection is also affirmed as to claims 16, 17, and 21.

As to Kojima, Appellants argue that in the fiber of Kojima there is no mention of incorporating the textile oil in the fiber itself. (App. Br. 8.) Appellants argue further that Kojima does not mention adding the fatty acid diesters of polyethylene glycol in a fray reducing amount, nor does the reference mention the amounts added (*id.*).

Claims 21-23 are drawn to “[a] suture comprising: a filament comprising a polyolefin and a fray reducing amount of a fatty acid diester of polyethylene glycol, wherein the fatty acid diester comprises from 0.01% to 5.0% by weight of the filament,” with claims 22 and 23 specifying that the fatty acid diester comprises “0.2% to 0.4%” of the filament. There is nothing in the claim specifying that the polyolefin and the fatty acid diester

of polyethylene glycol are mixed, as is required by claim 16. Thus, claims 21-23 encompass filaments where the fatty acid diester of polyethylene glycol is used as a coating of the polyolefin filament. Moreover, Kojima teaches that the fatty acid diester of polyethylene glycol, such as PEG distearate, may comprise .04% to 1.8% of the fiber (FF15), and thus Kojima anticipates the claimed ranges of fatty acid diester of polyethylene glycol of claims 21-23. The rejection of claims 21-23 as being anticipated by Kojima is affirmed.

CONCLUSIONS OF LAW

Thus: 1) Appellants have not demonstrated that the Examiner erred in rejecting the claims over references that do not specifically teach sutures and methods of making the sutures; 2) Appellants have not demonstrated that the Examiner erred in rejecting the claims over Everhart because Everhart does not disclose adding a fray reducing amount of the fatty acid diester of polyethylene glycol; and 3) Appellants have not demonstrated that the Examiner erred in rejecting the claims over Kojima even though Kojima does not incorporate the fatty acid diester of polyethylene glycol into the fiber itself.

ISSUE (Obviousness)

The Examiner concludes that the claims are obvious within the meaning of section 103.

Appellants contend that the Examiner has engaged in impermissible hindsight in arriving at the obviousness rejections on appeal.

Thus, the issue on Appeal is: Have Appellants shown that the Examiner engaged in impermissible hindsight in combining the references in the obviousness rejections on appeal?

FINDINGS OF FACT

FF17 The Examiner rejects claims 1-8, 12, 16, 17, and 21-23 under 35 U.S.C. § 103(a) as being obvious over the combination of Mattei and Ruter (Ans. 5).

FF18 Mattei is cited by the Examiner for teaching “a suture of polyolefin and a coating of PEG distearate.” (Ans. 5.)

FF19 Specifically, Mattei discloses that the “tie-down properties of multifilament surgical sutures are improved by coating the suture with an absorbable composition.” (Mattei, abstract.) The coating is added to the suture to provide a final add-on of 2 to 10% by weight of the suture, and it is “useful for improving the dry and wet tie-down smoothness of braided sutures.” (*Id.* at col. 2, ll. 57-68.)

FF20 Mattei teaches the use of the coating on absorbable multifilament braided sutures; but the reference also teaches that non-absorbable sutures, such as those made from polyolefins, may be used (col. 8, ll. 35-50). In addition, Mattei specifically exemplifies the use of polyethylene glycol distearate as the coating material (col. 8, Sample 8 of the Table).

FF21 The Examiner notes that Mattei does not disclose forming the suture by providing a melt of the polyolefin and the diester (Ans. 5).

FF22 Ruter is cited by the Examiner for teaching “that it was known that providing a coating on a fiber tended to wear off and that adding the coating

material to the melt before the fiber is produced provides a fiber having the coating material throughout the fiber thus preventing the undesirable wearing off of the coating material.” (*Id.*)

FF23 Specifically, Ruter teaches that “polyolefin products have a strong tendency to attract dust,” but that the surface may be “coated with a composition which reduces electrostatic charging.” (Ruter, col. 1, ll. 11-18.) Ruter teaches that a “more prolonged effect is attained by incorporating the antistatic additive into the polymeric material.” (*Id.* at col. 1, ll. 21-24.)

FF24 Thus, Ruter provides evidence that it was known in the art that a coating could be incorporated into a polyolefin fiber while still retaining the same properties it had a coating, as well as providing a more prolonged effect.

FF25 The Examiner concludes that it “would have been obvious for Mattei to have added the PEG distearate to the melt before forming the fiber as it would allow for the PEG distearate to be incorporated throughout the suture thus assuring it would not wear off.” (Ans. 5.)

FF26 The Examiner concludes further that it would have been obvious to use the materials in the claimed ratios and weights as “it is not inventive to discover the optimum or workable ranges by routine experimentation.” (Ans. 5 (quoting *In re Aller*, 220 F.2d 454, 456 (CCPA 1955).))

FF27 The Examiner rejects claims 9-11 and 19 under 35 U.S.C. § 103(a) over the combination of Mattei and Ruter as further combined with Chesterfield (Ans. 6).

FF28 The combination of Mattei and Ruter is relied upon as above. The Examiner notes that the combination does not specifically teach using polypropylene as the polyolefin (*id.*).

FF29 Chesterfield is relied upon for teaching that “it was known to make sutures out of polypropylene.” (*Id.*)

FF30 The Examiner concludes that it “would have been obvious to have used polypropylene as the generic ‘polyolefin’ of Mattei, as it provides the necessary requisite characteristics that sutures need as evidenced by Chesterfield.” (*Id.*)

FF31 The Examiner rejects claim 20 under 35 U.S.C. § 103(a) as being obvious over the combination of Mattei and Ruter as further combined with Singerman (Ans. 7).

FF32 The combination of Mattei and Ruter is relied upon as above. The Examiner notes that the combination does not specifically teach the suture in combination with a needle, as well as sterilizing the suture (*id.*).

FF33 Singerman is cited for teaching “that it was known to attach a suture to a needle and to sterilize the suture.” (*Id.*)

FF34 The Examiner concludes that it “would have been obvious to have sterilized the suture of Mattei and Ruter, and attach[] it to a needle, as this would ensure the use of a clean suture thus preventing contamination while threading the suture through tissue with the needle.” (*Id.*)

FF35 The Examiner rejects claims 2-5, 19, 22, and 23 under 35 U.S.C. § 103(a) over the combination of Birnbrich and Kojima (Ans. 7).

FF36 Birnbrich is relied upon as above.

FF37 The Examiner notes that Birnbrich does not teach the use of PEG distearate as the diester (*id.*).

FF38 The Examiner relies of Kojima for disclosing the use of PEG distearate on a polypropylene fiber (*id.*).

FF39 Specifically, Kojima teaches a conjugate fiber having high strength and soft feel (Kojima, col. 2, ll. 15-19).

FF40 The Examiner concludes that it “would have been obvious to have added PEG distearate to the fiber of Birnbrich, as this material provides the fiber with a soft feel yet high strength.” (Ans. 7.)

FF41 The Examiner rejects claims 6-8 and 10 under 35 U.S.C. § 103(a) over the combination of Birnbrich and Ruter (*id.*).

FF42 Birnbrich is relied upon as above.

FF43 The Examiner notes that Birnbrich fails to disclose the mixing method (*id.*).

FF44 Ruter is cited for disclosing “the claimed manner of mixing the components of the melt.” (*Id.* at 8.)

FF45 The Examiner concludes that it “would have been obvious to have formed the melt for the fibers in a manner taught by Ruter, as this would merely be a known alternative for forming a homogenous mixture.” (*Id.*)

FF46 The Examiner rejects claim 11 over the combination of Birnbrich and Yokohama (*id.*).

FF47 Birnbrich is relied upon as above.

FF48 The Examiner notes that Birnbrich fails to disclose the claimed melt flow index (*id.*).

FF49 Yokohama is cited for disclosing “the claimed melt flow index.” (*Id.*)

FF50 The Examiner concludes that it “would have been obvious to have used a melt flow index such as that taught by Yokohama, as this would facilitate the manufacturing of the fiber.” (*Id.*)

FF51 Claims 2-5, 19, 22, and 23 stand rejected under 35 U.S.C. § 103(a) as being obvious over the combination of Everhart and Kojima (*id.*).

FF52 Everhart is relied upon as above.

FF53 The Examiner notes that Everhart fails to disclose the use of PEG distearate as the diester (*id.*).

FF54 The Examiner relies of Kojima for disclosing the use of PEG distearate on a polypropylene fiber (*id.*).

FF55 Specifically, Kojima teaches a conjugate fiber having high strength and soft feel (Kojima, col. 2, ll. 15-19).

FF56 The Examiner concludes that it “would have been obvious to have added PEG distearate to the fiber of Everhart, as this material provides the fiber with a soft feel yet high strength.” (Ans. 8.)

FF57 The Examiner rejects claims 6-8 and 10 under 35 U.S.C. § 103(a) over the combination of Everhart and Ruter (*id.*).

FF58 Everhart is relied upon as above.

FF59 The Examiner notes that Everhart fails to disclose the mixing method (*id.*).

FF60 Ruter is cited for disclosing “the claimed manner of mixing the components of the melt.” (*Id.* at 9.)

FF61 The Examiner concludes that it “would have been obvious to have formed the melt for the fibers in a manner taught by Ruter, as this would merely be a known alternative for forming a homogenous mixture.” (*Id.*)

FF62 The Examiner rejects claim 11 over the combination of Everhart and Yokohama (*id.*).

FF63 Everhart is relied upon as above.

FF64 The Examiner notes that Everhart fails to disclose the claimed melt flow index (*id.*).

FF65 Yokohama is cited for disclosing “the claimed melt flow index.” (*Id.*)

FF66 The Examiner concludes that it “would have been obvious to have used a melt flow index such as that taught by Yokohama, as this would facilitate the manufacturing of the fiber.” (*Id.*)

PRINCIPLES OF LAW

The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) secondary considerations of nonobviousness, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17 (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.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *Id.* at 1739. An “[e]xpress 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).

Moreover, determining the optimum values of result effective variables is ordinarily within the skill of the art. *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980); *see also In re Aller*, 220 F.2d 454, 456 (CCPA 1955) (“[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.”).

ANALYSIS

As to the rejection of claim 1, the suture of claim 12, and the claims dependent thereon over the combination of Mattei and Ruter, Appellants argue that Mattei does not “disclose or suggest a suture formed from a melt of polyolefin and diester . . . with a fray reducing amount of a fatty acid diester of polyethylene glycol,” and thus “Mattei fails to render any of the pending claims obvious.” (App. Br. 12.) Ruter, Appellants argue, is drawn to “antistatic compositions and the use thereof with polyolefinic articles to reduce electrostatic charging and the attraction of dust to the polyolefinic article,” and thus fails to remedy the deficiencies of Mattei. (*Id.* at 13.) Appellants thus assert that the Examiner engaged in impermissible hindsight to arrive at the claimed invention. (*Id.* at 13.)

We acknowledge that neither Mattei nor Ruter disclose a suture formed from a melt of a polyolefin and a diester—if either reference had it would have been more properly applied under § 102 rather than § 103. As noted by the Examiner, however, Mattei suggests a suture comprising a

polyolefin and polyethylene glycol distearate, a fatty acid diester of polyethylene glycol (FF20), and Ruter supports the proposition that the ordinary artisan was aware that a coating material could be incorporated into a fiber and still retain the useful properties it had as a coating, and also have a more prolonged effect (FF24). Thus, we agree with the Examiner that in view of the teachings of Ruter it would have been obvious to one of ordinary skill at the time of the invention to incorporate the polyethylene glycol distearate coating into the polyolefin of suture to provide a more prolonged effect.

In addition, we disagree that the Examiner engaged in impermissible hindsight. As noted by the United States Supreme Court:

If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.

KSR, 127 S. Ct. at 1740. Ruter provides evidence that it was known in the art that coatings of polyolefins could be incorporated into the polyolefin itself, and still retains its desirable property, while having a more prolonged effect (FF24), and Appellants have not provided any evidence that it would have beyond the skill of the ordinary artisan.¹

¹ In that regard we reference both *Everhart* and *Birnbrich*, both of which demonstrate that polyolefinic filaments formed from a melt of a polyolefin

Thus, we conclude that Appellants have not rebutted the prima facie case of obviousness, and we affirm the rejection as to claims 1 and 12. As Appellants do not argue claims 2-8 separately, the rejection is affirmed as to those claims as well. 37 C.F.R. § 41.37(c)(1)(vii).

As to claims 16, 17, and 21-23, Appellants argue that the combination of Mattei and Ruter do not teach the amount of the fatty acid diester of polyethylene glycol as required by these claims. (App. Br. 14.)

We disagree. Mattei teaches that the coating, such as polyethylene glycol distearate, is present as a final add-on of 2 to 10% by weight of the suture (FF19). In addition, Mattei teaches that the coating is used to improve the tie-down properties of the suture (*id.*). Thus, we agree with the Examiner that it would have been obvious to optimize the amounts of polyethylene glycol distearate when added to the polyolefin melt as taught by the combination of Mattei and Ruter to obtain the best tie-down properties. Appellants have not provided any evidence demonstrating that the amounts would be different for that property than for the purpose of fraying (note that fraying would also affect the tie-down properties of the suture). Thus, we also affirm the rejection as to claims 16, 17, and 21-23.

Therefore, the rejection of claims 1-8, 12, 16, 17, and 21-23 over the combination of Mattei and Ruter is affirmed.

Appellants argue that neither Chesterfield nor Singerman remedy the deficiencies of the combination of Mattei and Ruter (App. Br. 15-18). We point Appellants' attention to the response to the analysis of the rejection of

and a fatty acid diester of polyethylene glycol were known in the art (FF6 and FF10).

Mattei and Ruter, and thus affirm the rejection of claims 9-11 and 19 over the combination of Mattei and Ruter as further combined with Chesterfield; as well as the rejection of claim 20 over the combination of Mattei and Ruter as further combined with Singerman.

As to claims 2-5, 19, 22, and 23 over the combination or Birnbrich in view of Kojima, Appellants argue that Birnbrich does not disclose or suggest methods of making the claimed polyolefin suture, and that Kojima fails to remedy the deficiencies of Birnbrich (App. Br. 19). Thus, Appellants again assert that the Examiner has engaged in impermissible hindsight in combining the references to arrive at the claimed invention (*id.* at 20). As to the rejection of claims 19, 22, and 23, Appellants argue that “Birnbrich does not disclose polyethylene glycol distearate.” (*Id.*).

As to the combination of Everhart and Kojima, Appellants argue that Kojima fails to remedy the deficiencies of Everhart, and that the Examiner engaged in impermissible hindsight in combining the references (App. Br. 23-24). As to the rejection of claims 19, 22, and 23, Appellants argue that the combination does not teach or suggest the claimed amounts of fatty acid diester of polyethylene glycol (*id.* at 24).

Appellants’ arguments are not convincing. As discussed above with respect to the anticipation rejection, the fact that Birnbrich and Everhart fail to disclose a suture is not relevant, as the recitation of a suture is merely intended use, and not a patentable limitation. Moreover, we conclude that the ordinary artisan would have been motivated to combine Birnbrich or Everhart with Kojima for the reasons set forth by the Examiner (see the analysis as to the combination of Mattei and Ruter).

As to Appellants' argument that Birnbrich does not disclose polyethylene glycol distearate, Kojima was relied upon to supply that limitation. As to Appellants' argument that the combination does not teach or suggest the claimed amounts of fatty acid diester of polyethylene glycol; as noted above, Birnbrich teaches a filament comprising a mixture of polyolefin and a fatty acid diester of polyethylene glycol, wherein the fatty acid diester comprises from 0.01% to 5.0% by weight of the filament, and thus does teach the claimed amounts of fatty acid diester of polyethylene glycol.

Thus, the rejection of claims 2-5, 19, 22, and 23 under 35 U.S.C. § 103(a) over the combination of Birnbrich and Kojima, and the rejection of claims 2-5, 19, 22, and 23 over the combination of Everhart and Kojima, are affirmed.

As to the combination of Birnbrich and Ruter or Yokohama, Appellants argue that both Ruter and Yokohama fail to remedy the deficiencies of Birnbrich, and that the Examiner engaged in impermissible hindsight in combining the references (App. Br. 21-23). As to the combination of Everhart and Ruter and the combination of Everhart and Yokohama, Appellants argue that both Ruter and Yokohama fail to remedy the deficiencies of Everhart, and that the Examiner engaged in impermissible hindsight in combining the references (App. Br. 25-27).

These arguments are not found to be convincing for the reasons set forth above. Thus, we affirm the rejection of claims 6-8 and 10 under 35 U.S.C. § 103(a) over the combination of Birnbrich and Ruter; the rejection of claim 11 over the combination of Birnbrich and Yokohama; the rejection

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of claims 6-8 and 10 under 35 U.S.C. § 103(a) over the combination of Everhart and Ruter; and the rejection of claim 11 over the combination of Everhart and Yokohama.

CONCLUSIONS OF LAW

We conclude that Appellants have not shown that the Examiner engaged in impermissible hindsight in combining the references in the obviousness rejections on appeal, and we affirm all of the obviousness rejections on appeal.

TIME LIMITS

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

CONCLUSION

All of the rejections on appeal are affirmed.

AFFIRMED

cdc

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