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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte STEVEN G. CORVELEYN

Appeal 2019-004762
Application 14/119,252
Technology Center 1700

Before BEVERLY A. FRANKLIN, KAREN M. HASTINGS, and
JEFFREY R. SNAY, *Administrative Patent Judges*.

SNAY, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1, 3–14, 19, and 22–26. 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(a). Appellant identifies 3M Company as the real party in interest. Appeal Br. 2.

BACKGROUND

The invention relates to fluoroelastomer-polyamide composite materials, such as may be used as seals in automobile fuel systems. Spec. 1, 14. According to the Specification, “the inventor has found that strong direct bonds between fluoropolymers and polyamides can be formed by using peroxide fluoropolymers having a low temperature retraction (TR-10).” *Id.* at 2.

Independent claims 1 and 13 read:

1. A composite material comprising a first component directly bonded to a second component, the first component comprising a peroxide cured fluoroelastomer having a temperature retraction TR-10 of -19°C or lower as measured according to ASTM D 1329 and the second component comprising a polyamide resin having a heat deflection temperature (HDT) of at least 130°C under a load of 0.45 MPa measured according to ASTM D648, wherein the peroxide cured fluoroelastomer is partially fluorinated.

13. A method of making a composite material comprising
i) providing
a) a first component comprising a peroxide curable fluoroelastomer having a temperature retraction TR-10 of -19°C or less and further comprising at least one peroxide curing agent wherein the peroxide curable fluoroelastomer is partially fluorinated;
b) a second component comprising a polyamide resin having a heat deflection temperature (HDT) of at least 130°C under a load of 0.45 MPa measured according to ASTM D648,
ii) forming a direct bond between first and second component by contacting the first component with the second component and curing the fluoroelastomer.

Appeal Br. 22, 23 (Claims Appendix).

Each remaining claim on appeal depends from claim 1 or 13.

REJECTIONS²

- I. Claims 1, 3–7, 9–14, 19, 22, 23, 25, and 26 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Grosse-Puppendahl³ and Amemiya.⁴
- II. Claim 8 stands rejected under 35 U.S.C. § 103 as unpatentable over Grosse-Puppendahl, Amemiya, and Schofield.⁵
- III. Claims 1, 3–7, 9–14, 19, and 22–26 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Grosse-Puppendahl and Fukushi.⁶
- IV. Claim 8 stands rejected under 35 U.S.C. § 103 as unpatentable over Grosse-Puppendahl, Fukushi, and Schofield.

OPINION

Rejection I: obviousness over Grosse-Puppendahl and Amemiya

With regard to the Examiner's rejection over Grosse-Puppendahl and Amemiya, Appellant argues the rejected claims as a group. *See* Appeal Br. 6–17. We select claim 1 as representative of the group. Each of claims 3–7, 9–14, 19, 22, 23, 25, and 26 stands or falls with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

Claim 1

With regard to claim 4 and relevant to Appellant's arguments on appeal, the Examiner finds that Grosse-Puppendahl discloses a fuel-resistant

² The Examiner's rejection of claim 16 (Final Act. 5) is moot in light of Appellant's cancellation of that claim.

³ US 6,162,385, issued December 19, 2000.

⁴ US 2006/0058450 A1, published March 16, 2006.

⁵ US 5,163,692, issued November 17, 1992.

⁶ US 2004/0054055 A1, published March 18, 2004.

fluoroelastomer-polyamide composite that differs from the material recited in claim 1 in that Grosse-Puppendahl does not specify the fluoroelastomer's temperature of retraction. Final Act. 3; Ans. 10. The Examiner finds that Amemiya discloses fuel-resistant fluoroelastomers exhibiting a temperature of retraction within the recited range, and that one of ordinary skill in the art would have had a reason to use Amemiya's fluoroelastomer in Grosse-Puppendahl's composite—namely, to provide freeze resistance as well as the desired resistance to fuel. Final Act. 3; Ans. 10.

Appellant argues the Examiner fails to show how either Grosse-Puppendahl or Amemiya teaches the relevance of a fluoropolymer's TR-10 value to improved bonding of the fluoropolymer to polyamides. Appeal Br. 7. Appellant contends the Examiner applied impermissible hindsight by searching the prior art for elements missing from Grosse-Puppendahl, and by asserting that the freeze resistance attributable to Amemiya's fluoroelastomer would have been desired in Grosse-Puppendahl's composite. *Id.* at 8–11.

Appellant's arguments are unpersuasive of reversible error. Grosse-Puppendahl states that the disclosed composite articles are intended for use as seals and, particularly, that the fluoroelastomer component should be resistant to fuels over a wide temperature range. Grosse-Puppendahl 1:45–46; 4:63–65. Grosse-Puppendahl further states that “[t]he selection of the type of [fluoroelastomer] rubber depends on the desired vulcanizate properties.” *Id.* at 3:37–39. Amemiya also is concerned with use of fluoroelastomer seals in automobile fuel systems, and that in such applications it is desirable to provide both fuel resistance and freeze resistance. Amemiya ¶¶ 3–4. In light of the foregoing disclosures, we are

persuaded that the Examiner's finding of a reason to use Amemiya's fluoroelastomer in Grosse-Puppenthal fluoroelastomer-polyamide composite is supported by a preponderance of the evidence of record. That the prior art has a different reason or motivation to use the recited fluoroelastomer is not evidence of impermissible hindsight where, as here, there is an articulated reason supported by a rational underpinning to make the combination. *See In re Kemps*, 97 F.3d 1427, 1430 (Fed. Cir. 1996). (“[T]he motivation in the prior art to combine the references does not have to be identical to that of the applicant to establish obviousness.”).

Appellant argues the Specification provides evidence of unexpected results. Appeal Br. 14. Particularly, Appellant contends that Table 3 in the Specification demonstrates that a peroxide-cured fluoroelastomer yields better polyamide bonding than a bisphenol-cured fluoroelastomer. *Id.* at 14–15. Appellant also contends that Tables 4–6 in the Specification show that heat aging performance was significantly enhanced by use of a peroxide-cured fluoroelastomer having a TR-10 value of -19°C or lower. *Id.* at 15.

A party asserting unexpected results as evidence of non-obviousness has the burden of proving that the results are unexpected. *In re Geisler*, 116 F.3d 1465, 1469–70 (Fed. Cir. 1997). Appellant's arguments to that effect cannot take the place of evidence. *Id.* at 1471; *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984). Moreover, the burden of proving the results are unexpected requires Appellant to proffer factual evidence that actually shows unexpected results relative to the closest prior art, *see In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991), and that is reasonably commensurate in scope with the protection sought by claim 1 on appeal, *In re Grasselli*, 713 F.2d 731, 743 (Fed. Cir. 1983). “[I]t is not enough to show

that results are obtained which differ from those obtained in the prior art: that difference must be shown to be an *unexpected* difference.” *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). The showing on which Appellant relies must reasonably support the entire scope of the claims at issue. *See In re Harris*, 409 F.3d 1339, 1344 (Fed. Cir. 2005).

We are not persuaded that the information contained in Tables 3–6 supports Appellant’s contention of unexpected results. Table 3, for example, reports identical T-peel test results for composites formed with FKM-1 (identified as a peroxide-curable fluoroelastomer having a TR-10 value of -19°C) and C-FKM-1 (identified as a peroxide-curable fluoroelastomer having a TR-10 value of -17°C). Table 4 reports an effect of heat aging on delamination using a single polyamide material, whereas Table 5 reports different such effects when different polyamides within the scope of the claimed invention are provided. *See Spec.* 19–20. Appellant does not explain in the Appeal Brief why these test results demonstrate unexpected results. Moreover, in light of our observations concerning the data in Tables 3–5, we are not persuaded that the information contained in these tables is sufficient to show that the achieved bond strength was unexpected, or that the showing would have been sufficiently commensurate in scope with the claims.

For the foregoing reasons, Appellant does not persuade us of reversible error in the Examiner’s rejection of claim 1 over Grosse-Puppendahl and Amemiya. Accordingly, we sustain Rejection I.

Rejection III: obviousness over Grosse-Puppendahl and Fukushi

The Examiner relies on the combined disclosures of Grosse-Puppendahl and Fukushi in the same manner as is discussed above in connection with Rejection I. Particularly, the Examiner finds Fukushi discloses fuel-resistant fluoroelastomers exhibiting a temperature of retraction within the recited range, and that one of ordinary skill in the art would have had a reason to use Fukushi's fluoroelastomer in Grosse-Puppendahl's composite to provide low temperature seal performance as well as the desired resistance to fuel. Final Act. 7. *See* Fukushi ¶ 3 (“Elastomers employed in fuel seal applications generally require low temperature properties, e.g. glass transition temperature (T_g) < -20^o C. to maintain sealing performance for cold weather.”).

With regard to the Examiner's rejection over Grosse-Puppendahl and Fukushi, Appellant relies on the same arguments as are presented and discussed above in connection with the Examiner's rejection over Grosse-Puppendahl and Amemiya. For the reasons given above, Appellant's arguments are not persuasive of reversible error. Accordingly, we sustain Rejection III for the same reasons given in connection with Rejection I.

Rejections II and IV applied to claim 8

In rejecting claim 8, the Examiner finds that Schofield teaches use of a polyamide imide to advantageously provide a high modulus to a fluoroelastomer-polyamide composite, thereby providing deformation resistance at high temperature and pressure. Final Act. 4, 8; Ans. 15. *See* Schofield 10:5–16 (disclosing bonding of high modulus plastic, including

polyamide-imide, to an elastomer in a seal component “resist extrusion at extreme high temperatures and pressures”).

Appellant does not dispute that the Examiner’s finding that the high modulus property taught by Schofield would have been desirable in Grosse-Puppendahl’s composite seal. Rather, Appellant solely argues that the Examiner fails to show that Grosse-Puppendahl requires any improvement in the modulus of the materials already disclosed in that reference. Appeal Br. 16, 20–21. The Examiner’s finding that Schofield discloses a polyamide which would have been recognized as suitable for use as the polyamide component in Grosse-Puppendahl is sufficient to articulate a reason for such use. Appellant does not challenge that finding. Accordingly, Appellant’s argument is not persuasive of reversible error.

Rejections II and IV are sustained.

CONCLUSION

The Examiner’s decision rejecting claims 1, 3–14, 19, and 22–26 is affirmed.

DECISION SUMMARY

In summary:

Claim(s) Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 3–7, 9–14, 19, 22, 23, 25, 26	103(a)	Grosse-Puppendahl, Amemiya	1, 3–7, 9–14, 19, 22, 23, 25, 26	
8	103(a)	Grosse-Puppendahl, Amemiya, Schofield	8	

Appeal 2019-004762
Application 14/119,252

1, 3-7, 9-14, 19, 22-26	103(a)	Grosse-Puppendahl, Fukushi	1, 3-7, 9-14, 19, 22-26	
8	103(a)	Grosse-Puppendahl, Fukushi, Schofield	8	
Overall Outcome			1, 3-14, 19, 22-26	

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

AFFIRMED