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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL
BOARD

Ex parte BYOUNG-IL KANG and CHANG-HUN HAN

Appeal 2017-009453
Application 13/805,224
Technology Center 1700

Before ROMULO H. DELMENDO, KAREN M. HASTINGS, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants¹ appeal under 35 U.S.C. § 134(a) from the Examiner's final rejection of claims 1–3, 12, and 19–24 under 35 U.S.C. § 103(a) over the combination of Fischer et al. (US 4,906,696, issued Mar. 6, 1990), and Faris (WO 02/085980 A1, published Oct. 31, 2002). We have jurisdiction over the appeal pursuant to 35 U.S.C. § 6(b).

We AFFIRM.

¹ LG Chem. Ltd. is stated to be the real party in interest (Appeal Br. 3).

Claim 1 is representative of the claimed invention (emphasis added to highlight key disputed limitations):

1. A resin composition containing an acrylic copolymer polymerized from monomers comprising:
 - (1) 50 - 98.9 wt% of an alkyl(meth)acrylate-based monomer excluding a tert-butyl(meth)acrylate-based monomer;
 - (2) 1 - 49.9 wt% of a (meth)acrylate-based monomer including an aromatic ring selected from the group consisting of phenyl methacrylate, 4-t-butylphenyl methacrylate, and 4-methoxyphenyl methacrylate; and
 - (3) *0.1 - 10 wt% of a tert-butyl(meth)acrylate-based monomer*, wherein the resin composition comprises polycarbonate resin mixed therein;
wherein the resin composition comprises 95 wt% to 99.9 wt% of the acrylic copolymer *and 0.1 wt% to 5 wt% of the polycarbonate resin* based on a total weight of the resin composition, and
wherein a weight-average molecular weight of the acrylic copolymer is within a range of 50,000 to 150,000,
wherein a glass transition temperature (Tg) of the acrylic copolymer is 122°C or more.

Appellants rely upon the arguments for claim 1 for all the claims, however, they separately argue the patentability of claim 24 as it further limits the Tg limitation in dispute to “130°C or more” (Claims Appendix; Appeal Br. 14).

ANALYSIS

Upon consideration of the relied-upon evidence on this record and each of Appellants’ contentions, we find that the preponderance of evidence on this record supports the Examiner’s conclusion that the subject matter of Appellants’ independent claim 1 is unpatentable over the applied prior art. We sustain the Examiner’s 103(a) rejection based on the findings of fact,

conclusions of law, and rebuttals to arguments expressed by the Examiner in the Answer.

We add the following for emphasis.

Appellants' first argue that, contrary to the Examiner's position, Fischer does not teach the required glass transition temperature (T_g) of 122°C or more for its methacrylate copolymers (Appeal Br. 10; Reply Br. 2). Appellants argue that the Examiner has misread the relied upon passage of Fischer (Fischer, col. 7, ll. 41–50; reproduced on p. 10 of the Appeal Br.) and that it only teaches that the Vicat softening points, VET, may be approximately 110° to 130°C. The Examiner says a plain reading of the passage with its word “and” means that both the VET and T_g temperatures may be in this range (Ans. 8). Appellants' argument is not persuasive of showing reversible error in the Examiner's position that Fischer teaches or suggests the claimed range.

Even assuming Appellants are correct that it is only the VET temperature that is expressly taught to be approximately 110-130 C there is no dispute that Fischer teaches “and the glass transition values T_g correlated with this” (Fischer, col. 7, ll. 40–41). A review of the VET and T_g values in the examples of Fischer² shows that the T_g value is always within a few degrees of the VET, and may be even up to 7 degrees higher. The T_g of

² While Appellants point out that some of the examples Fischer are blends with a polycarbonate, not the acrylic copolymers themselves (Appeal Br. 10, 11), these examples still evince that the glass transition temperature correlated with a VET is no more than two degrees less than the VET, and more frequently higher than the VET temperature (e.g., 3 to 7 degrees higher). Notably claim 1 need only contain 0.1 wt. percent of the polycarbonate material.

Example 10 which is admittedly methacrylate copolymers is indeed 5 degrees higher than its VET (col. 10, ll. 30–31; Appeal Br. 10). In light of these circumstances, one of ordinary skill in the art would have readily inferred that the Tg value may be in a range as recited in each of claims 1 (122°C or more) and 24 (130°C or more). It is well settled that a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in the art would have reasonably been expected to draw therefrom. *See In re Fritch*, 972 F.2d 1260, 1264–65 (Fed. Cir. 1992).

Next, Appellants' argue that the Examiner's position that Faris suggests that the addition of tert-butyl(meth)acrylate (TMBA) may increase the Tg is not a correct interpretation of Faris (Appeal Br. 11, 12). This is not persuasive of reversible error. Faris explicitly states that

a copolymer of methyl methacrylate and t-butyl methacrylate that has been pyrolyzed to provide a copolymer having an increased glass transition temperature and can be blended with poly(methyl methacrylate) to provide a clear plastic material having an increased heat distortion temperature.

Faris ¶ 21.

Faris ¶ 24 is clearly referring to the high Tg methacrylate copolymer comprising TMBA that has been pyrolyzed as discussed in ¶ 23 and ¶ 21.³ Thus one of ordinary skill in the art would have reasonably inferred that the addition of TMBA to the methacrylate copolymers of Fischer with pyrolysis would have been appropriate for increasing the Tg. Even assuming that

³ Claim 1 does not appear to exclude pyrolysis. Nonetheless, Faris still fairly suggests use of TMBA as a component of a blend with methacrylate copolymers.

Faris does not explicitly teach increasing the T_g by the use of TMBA, both Fisher and Faris nonetheless exemplify that a high T_g is desirable and Faris exemplifies that TMBA may be used in a blend with methacrylate copolymers (Faris, e.g., ¶¶ 21, 24). *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) (“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.”). Appellants have not shown that the use of TMBA in the methacrylate blend of Fisher would have been “more than the predictable use of prior art elements according to their established functions.” *Id.* at 417. Notably, claim 1 encompasses the use of as little as 0.1 wt% TMBA.

Appellants’ arguments that Faris teaches away from use of polycarbonate as disclosed in Fisher and required by the claims because Farris states polycarbonate with acrylates cannot be blended to produce a clear material (Appeal Br. 12, 13; Reply Br. 4, 5) are also unpersuasive of error. Whether the prior art teaches away from the claimed invention is a question of fact, *In re Harris*, 409 F.3d 1339, 1341 (Fed. Cir. 2005). As aptly pointed out by the Examiner, Fisher teaches, contrary to Appellants’ argument, that these materials may be blended to produce a clear film (Ans. 9, 10). Furthermore, claim 1 encompasses as little as 0.1 wt% polycarbonate up to 5 wt%. Fisher teaches as little as 0.9 wt% polycarbonate may be used (Fisher col. 4, ll. 34- 39). Fisher’s statement that it prefers blends with more than 5 wt% (see, Reply Br. 4) does not detract from its broader disclosure that less may be used. An artisan of ordinary skill would have weighed the advantages and disadvantages of how much to use of each component. “The fact that the motivating benefit comes at the expense of another benefit, however, should not nullify its use as a basis to modify the disclosure of one

reference with the teachings of another. Instead, the benefits, both lost and gained, should be weighed against one another.” *Winner Int’l Royalty Corp. v. Wang*, 202 F.3d 1340, 1349 n. 8 (Fed. Cir. 2000).

Furthermore, under the flexible inquiry set forth by the Supreme Court, the PTO must take account of the “inferences and creative steps,” or even routine steps, that an ordinary artisan would employ. *Ball Aerosol and Specialty Container, Inc. v. Limited Brands, Inc.*, 555 F.3d 984, 993 (Fed. Cir. 2009) (citation omitted). See *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003) (“In cases involving overlapping ranges, we and our predecessor court have consistently held that even a slight overlap in range establishes a *prima facie* case of obviousness.”). “Obviousness does not require absolute predictability of success . . . all that is required is a reasonable expectation of success.” *In re Kubin*, 561 F.3d 1351, 1360 (Fed. Cir. 2009) (citing *In re O’Farrell*, 853 F.2d 894, 903–04 (Fed. Cir. 1988)).

Significantly, Appellants have not directed us to any evidence demonstrating that the claimed blend exhibits unexpected results. See *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990) (where the difference between the claimed invention and the prior art is some range, the applicant must show that the particular range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range).

In light of all the above principles, a preponderance of the evidence supports the Examiner’s rejection of the claims. “A person of ordinary skill is also a person of ordinary creativity, not an automaton.” *KSR Int’l. Co. v. Teleflex Inc.*, 550 U.S. 398, 421 (2007).

Appellants do not rely upon any evidence of unexpected results.

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The decision of the Examiner is affirmed.

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

AFFIRMED