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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ETIENNE AEPLI and PIERRE DUEBON

Appeal 2019-004822
Application 14/680,608
Technology Center 1700

Before CATHERINE Q. TIMM, BEVERLY A. FRANKLIN, and
DEBRA L. DENNETT, *Administrative Patent Judges*.

DENNETT, *Administrative Patent Judge*.

DECISION ON APPEAL¹

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant² appeals from the Examiner’s decision to reject claims 1, 5, 6, 8–10, 12–15, 17–20, and 22–34 of Application 14/680,608, which constitute all the claims pending in this application. We have jurisdiction under 35 U.S.C. § 6(b).

¹ In our Decision, we refer to the Specification (“Spec.”) of Application No. 14/680,608 filed April 7, 2015 (“’608 App’n”); the Non-Final Office Action dated September 4, 2018 (“Non-Final Act.”); the Appeal Brief filed Feb. 25, 2019 (“Appeal Br.”); the Examiner’s Answer dated Mar. 27, 2019 (“Ans.”); and the Reply Brief filed May 28, 2019 (“Reply Br.”).

² We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as EMS-Patent AG. Appeal Br. 3.

For the reasons set forth below, we AFFIRM.

The subject matter of the invention relates to electrically conductive molding materials and molded bodies made therefrom, and the use of particulate fillers for increasing the electrical conductivity of polyamide molding materials containing carbon fibers. Spec. ¶ 2. According to the Specification, carbon fiber reinforced plastic materials are used in lightweight construction in aviation and astronautics or for sports appliances due to their light weight and outstanding mechanical properties. Spec. ¶ 3. In the Specification the term “polyamide” (“PA”) is a generic term which comprises homopolyamides and copolyamides as well as mixtures thereof. Spec. ¶ 15. Specific polyamides are identified in accordance with ISO standard 1874-1:1992(E). Spec. ¶ 15,

Claim 1, reproduced below from the Claims Appendix of the Appeal Brief, illustrates the claimed subject matter:

1. A polyamide molding material, having the following composition:
 - (a) 25 to 50% by weight of at least one semi-crystalline polyamide selected from the group consisting of PA 46, PA 6, PA 66, PA 11, PA 12, PA 610, PA 1212, PA 1010, PA 10/11, PA 10/12, PA 11/12, PA 6/10, PA 6/12, PA 6/9, PA 8/10, PA 612, PA 66/6, PA 4T/4I, PA 4T/6I, PA 5T/5I, PA 6T/6I, PA 6T/6I/6, PA 6T/66, PA 6T/610, PA10T/106, PA 6T/612, PA 6T/10T, PA 6T/10I, PA 10T, PA 12T, PA 10T/10I, PA 10T/12, PA 10T/11, PA 6T/9T, PA 6T/12T, PA 6T/10T/6I, PA 6T/6I/6, PA 6T/6I/12, PA 10T/612, PA 10T/610, and/or mixtures, blends or alloys of said polyamides;
 - (b) 4 to 18% by weight of carbon fibers with a fiber diameter in the range of 2 to 10 μm ;
 - (c) 20 to 50% by weight of at least one particulate mineral or saline filler;

- (d) 3 to 30% by weight of at least one amorphous polymer with a glass transition temperature of at least 45°C determined according to ISO 11357; wherein if the at least one amorphous polymer comprises polyphenylene ether, the polyamide molding material contains 5 to 9% by weight of the polyphenylene ether;
- (e) 0 to 20% by weight of carbon black;
- (f) 0 to 20% by weight of at least one further additive and/or addition agent;

wherein the components (a) to (f) add up in total to 100% by weight, and

wherein the molding material has a specific surface resistance of 1×10^{-1} to 1×10^4 ohms.

Appeal Br. 24 (Claims App'x).

REFERENCES

The Examiner relies on the following prior art in rejecting the claims:³

Name	Reference	Date
Uchida et al. ("Uchida")	US 2009/0098325 A1	Apr. 16, 2009
Yasue et al. ("Yasue") ⁴	JP 03093855 A	Apr. 18, 1991

³ The Examiner relies on the Antron Technical Bulletin as evidence that crystalline polyamides disclosed in Yasue are not 100% crystalline. *See* Non-Final Act. 6.

⁴ The Examiner relies on an English-language translation of the reference without objection from Appellant.

REJECTIONS⁵

The Examiner maintains the rejection of claims 1, 5, 6, 8–10, 12–15, 17–20, and 22–34 under 35 U.S.C. § 103 as obvious over Yasue in view of Uchida, as evidenced by Antron Technical Bulletin. Non-Final Act. 6–9.

DISCUSSION

We review the appealed rejections for error based upon the issues identified by Appellant and in light of the arguments and evidence produced thereon. *Ex parte Frye*, 94 USPQ2d 1072, 1075 (BPAI 2010) (precedential), (cited with approval in *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011)) (“[I]t has long been the Board’s practice to require an applicant to identify the alleged error in the [E]xaminer’s rejections.”). After considering the evidence presented in this Appeal and each of Appellant’s arguments, we are not persuaded that Appellant identifies reversible error in the Examiner’s rejection.

In arguing against the Examiner’s rejection of claims 1, 5, 6, 8–10, 12–15, 17–20, and 22–34 as obvious over Yasue in view of Uchida, as evidenced by Antron Technical Bulletin, Appellant does not argue any claim apart from the others. *See* Appeal Br. 20–22. We select claim 1 as representative for resolving the appeal. Claims 5, 6, 8–10, 12–15, 17–20, and 22–34 stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv).

With regard to claim 1, the Examiner finds that Yasue discloses the invention “substantially as claimed.” Non-Final Act. 6. More specifically,

⁵ In the Answer, the Examiner withdrew the rejection of claims 1, 5, 6, 8–10, 12–15, 17–20, and 22–34 under 35 U.S.C. § 103 as obvious over Uchida. Ans. 6.

the Examiner finds that Yasue discloses (A) 15–98 wt% of crystalline polyamide (reading on component (a) of claim 1); and (B) 1–70 wt% of polyphenylene ether and (C) 1–50 wt% of amorphous polyamide having a glass transition temperature of at least 100°C (both reading on component (d) of claim 1). *Id.* The Examiner finds that Yasue teaches that its resin composition can contain further additives such as reinforcing agent, carbon fiber, talc, calcium carbonate, and mica. *Id.* The Examiner finds that Yasue does not disclose (1) the specific claimed ranges of (A), (B), or (C); (2) the carbon fiber diameter and amount of carbon fiber in the composition; (3) the particulate filler and amount in the composition; (4) carbon black; (5) the additive; or (6) the claimed surface resistivity of the molding. *Id.* at 6–7.

The Examiner relies on Uchida as teaching addition of (i) resin reinforcing fibers such as carbon fiber having a diameter of 3–30 μm in 10–200 parts per 100 parts of polyamide resin; (ii) fillers such as calcium carbonate, talc, and mica in an amount of 200 parts by mass or less per 100 parts by weight polyamide; (iii) 3–30 parts carbon black per 100 parts by mass of semi-aromatic polyamide resin; (iv) additives which satisfy claim component (f); and (v) an electrical surface resistance of 1×10^6 ohm/sq or less. *Id.* at 7.

The Examiner finds that the ranges of (A), (B), and/or (C) disclosed in Yasue overlap the ranges of components (a) and (f) claimed in claim 1. *Id.* at 7–8. The Examiner also finds that the ranges of carbon fiber amount, carbon fiber diameter, filler amount, carbon black amount, and specific surface resistivity disclosed in Uchida overlap the claimed ranges of components (b), (c), and (e) in claim 1. *Id.*

The Examiner determines that it would have been obvious one of ordinary skill in the art at the time of the invention to combine the teachings

of Yasue and Uchida to improve mechanical strength and slidability of the Yasue's resin, and provide electrical properties and stability to the composition. *Id.* at 8.

Appellant argues that the claimed amount of “at least one particulate mineral or saline filler” (component (c) of claim 1) is not disclosed by Yasue or Uchida. Appeal Br. 24. However, the Examiner finds correctly that Yasue teaches “talc, calcium carbonate, and mica” as components of the resin composition (Non-Final Act. 6), all of which are identified as particulate mineral or saline fillers in the '608 App'n (Spec. ¶ 24). Moreover, Uchida discloses calcium carbonate, talc, and mica as specific examples of fillers, and states that “[o]ne or more” of the identified fillers may be employed. Uchida ¶ 85. Thus, Uchida teaches that 200 parts by mass or less with respect to 100 parts by mass of resin may be used as a filler. *See id.* Contrary to Appellant's assertion, this disclosure teaches an amount that overlaps the claimed “20 to 50% by weight of at least one particulate mineral or saline filler” in claim 1.

Uchida's disclosure is sufficient to create a prima facie case of obviousness of the limitation. *In re Peterson*, 315 F.3d 1325, 1329 (Fed. Cir. 2003) (a prima facie case of obviousness typically exists when the ranges of a claimed composition overlap the ranges disclosed in the prior art). This prima facie case of obviousness can be overcome if Appellant shows either (i) that the prior art teaches away from the claimed invention or (ii) that there are new and unexpected results relative to the closest prior art. *Iron Grip Barbell Co. v. USA Sports, Inc.*, 392 F.3d 1317, 1322 (Fed. Cir. 2004) (citing *In re Geisler*, 116 F.3d 1465, 1471 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990)). Here, Appellant does not neither.

Appellant's argument that Uchida's examples do not contain particulate mineral or saline filler (Appeal Br. 21) is unpersuasive of reversible error. The teaching of Uchida is not limited to the examples. *In re Mills*, 470 F.2d 649, 651 (CCPA 1972) (“[A] reference is not limited to the disclosure of specific working examples.”); *see also In re Mercier*, 515 F.2d 1161, 1165 (CCPA 1975) (“[A]ll of the relevant teachings of the cited references must be considered in determining what they fairly teach to one having ordinary skill in the art.”); *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976) (“all disclosure of the prior art, including unpreferred embodiments, must be considered”). Furthermore, disclosed examples do not constitute a teaching away from a broader disclosure. *In re Susi*, 440 F.2d 442, 446 n.3 (CCPA 1971).

According to Appellant, “Uchida appears to indicate that a specific surface resistance of $1 \times 10^6 \Omega/\text{sq}$ or less is a general goal . . .” Appeal Br. 22 (citing Uchida ¶ 132). Uchida discloses “[t]he electrical resistance (specific surface resistance) is preferably $1 \times 10^6 \Omega/\text{sq}$ or less,” which completely encompasses the claimed range of specific surface resistance, i.e., 1×10^{-1} to 1×10^4 ohms. *See* Uchida ¶ 132. As with the particulate mineral or saline filler limitation, the teaching of an amount that overlaps the claimed amount creates a prima facie case of obviousness of the claimed specific surface resistance. *Peterson*, 315 F.3d at 1329. In an effort to overcome obviousness, Appellant argues both teaching away from the limitation and unexpected results for the composition. *See* Appeal Br. 22; Reply Br. 2–5.

Regarding teaching away, Appellant contends that Uchida imposes strict guidelines and limitations on how much conductive filler can be used in the composition by disclosing the desirability of adding as small an amount of conductive filler as possible, as “long as the target electrical

conductivity is obtained.” Reply Br. 2 (quoting Uchida ¶ 119). According to Appellant, Uchida teaches away from a specific surface resistance below $1 \times 10^6 \Omega/\text{sq}$ because “the conductive additives that Uchida teaches are necessary to obtain low surface resistance harm the physical properties of the composition.” *Id.* at 3. Appellant focuses on the *examples* in Uchida, rather than on the full disclosure in the reference. As discussed *supra*, disclosed examples do not constitute a teaching away from a broader disclosure, *Susi*, 440 F.2d at 446 n.3.

Uchida states:

The polyamide resin composition constituting the pipe joint of the present invention may further comprise a conductive filler. In this manner, *electrical conductivity can be imparted* to the obtained pipe joint. In the polyamide resin composition, *when the amount of the conductive filler added is too low, the effects of improving electrical conductivity are not satisfactory*. Therefore, in order to obtain sufficient antistatic properties, it is preferable that the conductive filler be added in an amount such that the specific volume resistivity of a molded article obtained by melt-extruding a polyamide resin composition comprising the conductive filler added thereto is $10^9 \Omega\text{-cm}$ or less, and particularly *$10^6 \Omega\text{-cm}$ or less*. However, the addition of the conductive filler significantly decreases various physical properties of the polyamide resin composition, in particular, strength, elongation and impact resistance, and is likely to deteriorate the flowability. Therefore, it is desirable that the amount of the conductive filler added be as small as possible *so long as a target electrical conductivity level is obtained*.

Uchida ¶ 119 (emphasis added).

Thus, Uchida teaches too little conductive filler does not provide the desired electrical conductivity, and too much decreases physical properties. Uchida teaches that the target electrical conductivity is $10^6 \Omega\text{-cm}$ *or less*, which overlaps the specific surface resistance claimed in claim 1. Uchida,

therefore, does not “criticize, discredit, or otherwise discourage the solution claimed” by Appellant (*In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004)), and does not teach away.

Finally, Appellant attempts to show that the claimed composition has new and unexpected results. *See* Appeal Br. 21, 22; Reply Br. 4–5. “[T]he burden of showing unexpected results rests on he who asserts them.” *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972). Appellant argues that the Specification contains sufficient data points inside and outside the claimed range of particulate mineral or saline filler to overcome prima facie obviousness of the range. Reply Br. 4. We find that it does not.

The Specification discloses 14 examples, all but two of which contain either 35% or 40% by weight of calcium carbonate. Spec. ¶ 77. Two examples—VB4 and VB5—contain no calcium carbonate. Spec. ¶ 77. The 12 examples containing 35% or 40% by weight of calcium carbonate show specific surface resistance (ohm) of 1.2×10^2 to 3.5×10^{10} . Spec. ¶ 78. VB4 and VB5 show specific surface resistance (ohm) of 1.3×10^5 to 2.4×10^6 . Spec. ¶ 78. Therefore, the examples do not support that 35% to 40% by weight of calcium carbonate—much less 20 to 50% by weight of calcium carbonate—unexpectedly produces the claimed specific surface resistance.

“When an applicant seeks to overcome a prima facie case of obviousness by showing improved performance in a range that is within or overlaps with a range disclosed in the prior art, the applicant must ‘show that the [claimed] range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range.’” *Geisler*, 116 F.3d at 1470–71 (quoting *Woodruff*, 919 F.2d. at 1578); *see also Peterson*, 315 F.3d at 1330 (An applicant must show that whatever property they are asserting is unexpected throughout the claimed range, but not outside that

critical range.) Here, Appellant fails to demonstrate that even the range of 35% to 40% by weight of calcium carbonate is critical, and provides no evidence for compositions comprising 20% to 35% or 40% to 50% by weight of calcium carbonate. Appellant fails to demonstrate any criticality for the claimed range of “20 to 50% by weight.”

Moreover, the results provided are limited to a single specific filler (calcium carbonate), while the claimed scope is to *any* combination of *any* particulate mineral or saline fillers. *See* Appeal Br. 24 (Claims App’x). Unexpected results must be “commensurate in scope with the degree of protection sought by the claims on appeal.” *In re Harris*, 409 F.3d 1339, 1344 (Fed. Cir. 2005); *see also In re Graselli*, 713 F.2d 731, 743 (Fed. Cir. 1983) (“It is well settled ‘that objective evidence of non-obviousness must be commensurate in scope with the claims which the evidence is offered to support.’”). “Commensurate in scope” means that the evidence provides a reasonable basis for concluding that the untested embodiments encompassed by the claims would behave in the same manner as the tested embodiment(s). *See In re Lindner*, 457 F.2d 506, 508 (CCPA 1972). Claim 1 is much broader in scope than the single filler tested and the much narrower amount of that filler. There is no adequate basis for reasonably concluding that the number and variety of compositions included by claim 1 would behave in the same manner as the tested compositions.

For the reasons above, we sustain the rejection of claim 1 over Yasue in view of Ochida. For those same reasons, we also sustain the rejection of claims 5, 6, 8–10, 12–15, 17–20, and 22–34 over the same references.

DECISION SUMMARY

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 5, 6, 8–10, 12–15, 17–20, 22–34	103	Yasue, Ochida, Antron Technical Bulletin	1, 5, 6, 8–10, 12–15, 17–20, 22–34	

TIME PERIOD FOR RESPONSE

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