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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SOICHI UCHIDA, KAZUAKI MATSUMOTO,
MASASHI SAKAGUCHI, YASUSHI NODA, and SYOJI UBUKATA

Appeal 2019-001233
Application 13/878,714
Technology Center 1700

Before LINDA M. GAUDETTE, JEFFREY B. ROBERTSON, and
MERRELL C. CASHION, JR., *Administrative Patent Judges*.

GAUDETTE, *Administrative Patent Judge*.

DECISION ON APPEAL¹

The Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner's decision finally rejecting claims 1–3, 5, 7–9, 12–16, and 18.³

We AFFIRM.

¹ This Decision includes citations to the following documents: Specification filed April 10, 2013 (“Spec.”); Final Office Action dated April 20, 2018 (“Final”); Appeal Brief filed August 31, 2018 (“Appeal Br.”); Examiner’s Answer dated September 28, 2018 (“Ans.”); and Reply Brief filed November 27, 2018 (“Reply Br.”).

² We use the word “Appellant” to refer to the “Applicant” as defined in 37 C.F.R. § 1.42(a). The Appellant identifies the real party in interest as Kaneka Corporation. Appeal Br. 2.

³ We have jurisdiction under 35 U.S.C. § 6(b).

CLAIMED SUBJECT MATTER

The invention relates to a highly thermally conductive resin molded article containing a thermoplastic resin. Spec. 1:10–12. The article may be, for example, a housing for a personal computer or a mobile electronic device. *Id.* at 1:16–22. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A highly thermally conductive resin molded article at least comprising:

(A) polyalkylene terephthalate thermoplastic polyester resin;

(B) platy talc particles; and

(C) a glass fiber reinforcement,

the (A) polyalkylene terephthalate thermoplastic polyester resin content falls within a range between 35 % by volume and 55 % by volume, where all of the compositions which constitute the highly thermally conductive resin molded article are 100 % by volume;

(B) the platy talc particle content falling within the range between 10 % by volume and 60 % by volume, where all of the compositions which constitute the highly thermally conductive resin molded article are 100% by volume,

the number average particle size of the (B) platy talc particles falling within the range between 20 μm and 80 μm ,

the (B) platy talc particles having an aspect ratio falling within the range between 8 and 20, and 75% by volume or more of the entire (B) platy talc particles being oriented so that their plate surfaces are in parallel with a direction in which a surface of said highly thermally conductive resin molded article lies within $\pm 30^\circ$,

the (C) glass fiber reinforcement content falls within the range between 5 % by volume and 35 % by volume, where all of the compositions which constitute the highly thermally conductive resin molded article are 100 % by volume, and

50% by volume or more of said highly thermally
conductive resin molded article has a thickness of 2.0 mm or
less.

Appeal Br. 15–16 (Claims Appendix).

REFERENCES

The Examiner relies on the following prior art as evidence of
unpatentability:

Noguchi JP 2010-121102 A June 3, 2010

Agarwal US 2006/0142455 A1 June 29, 2006

Lambourne, *Paint and Surface Coatings; Theory and Practice*, pp. 146–148
(1987).

REJECTIONS

1. Claims 1–3, 5, 12–15, and 18 are rejected under 35 U.S.C. § 103(a) as unpatentable over Agarwal.
2. Claims 7 and 16 are rejected under 35 U.S.C. § 103(a) as unpatentable over Agarwal in view of Noguchi, as translated.
3. Claims 8 and 9 are rejected under 35 U.S.C. § 103(a) as unpatentable over Agarwal in view of Lambourne.

OPINION

The Appellant’s arguments in support of patentability of all claims are directed to limitations in claim 1. *See generally* Appeal Br. 6–13. Accordingly, we decide the appeal of the claims subject to the first ground of rejection on the basis of claim 1, and also consider the Appellant’s arguments made in support of patentability of claim 1 to the extent

applicable to the separate rejections of claims 7–9 and 16. *See* 37 C.F.R. § 41.37(c)(1)(iv).

The Examiner found that Agarwal discloses the invention as recited in claim 1, with the exception of the relative amounts of talc particles and glass fibers. Final 3–4. The Examiner found that the ordinary artisan would have formulated a composition containing these two components in the claimed amounts as a matter of routine experimentation. *Id.*

The Appellant argues that there would have been “no apparent reason or teaching to specifically lead one to select ‘polyethylene terephthalate’ or ‘polybutylene terephthalate’ (to arrive at the component (A)) and to specifically select, from 17 fillers listed in paragraph [0079] of Agarwal et al., a combination of ‘talc’ and ‘glass fibers’ (to arrive at the components (B) and (C), respectively).” Appeal Br. 9. The Appellant continues to advance this argument in the Reply Brief, *see* Reply Br. 4–5, further asserting that “it is . . . necessary to repeat numerous experiments in order to select, from among the numerous combinations and without any knowledge (teaching or suggestion regarding the technical content of the present invention), a combination of the components (A) to (C) with the specific features of the present invention,” namely, “a highly thermally conductive resin molded article having excellent thermal conductivity,” *id.* at 4. These arguments are not persuasive for the reasons stated in the Answer and below.

Agarwal discloses “a polymer composition compris[ing] a matrix polymer component; a fluoropolymer; and a filler.” Agarwal ¶ 7. “In one embodiment, poly(alkylene terephthalates) are used.” *Id.* Agarwal discloses that “[o]ne useful class of fillers is the particulate fillers, which may be of any configuration, for example spheres, plates, fibers, acicular, flakes,

whiskers, or irregular shapes.” *Id.* ¶ 77. Agarwal discloses numerous possible fillers, *see id.* ¶ 78, but lists 17 fillers, including talc and glass fibers, as preferred, *id.* ¶ 79.⁴ According to Agarwal, “mica, talc, silicon carbide, and combinations comprising at least one of the foregoing fillers are of specific utility.” *Id.* Agarwal identifies talc as a plate-like filler. *Id.* ¶ 77.

Agarwal discloses that “in one embodiment, good mechanical properties are obtained in combination with good flow properties, in particular flow properties that render the compositions suitable for injection molding.” Agarwal ¶ 132. Agarwal discloses that “[t]he melt blended compositions can be molded into useful articles,” including “enclosures for electrical and telecommunication devices.” *Id.* ¶ 133. Agarwal provides test results for various compositions including one in which the resin is a combination of polycarbonate and polybutylene terephthalate and the filler is mica. *See* Agarwal Table 2, Ex. Nos. 34–36. Agarwal discloses that “compositions in accordance with the . . . invention have excellent [tensile] modulus,” *id.* ¶ 140, and that “excellent results can be obtained using a variety of polymer matrix systems,” *id.* ¶ 142. Agarwal discloses that “[t]he properties of samples using mica or talc as fillers showed particularly good results.” *Id.* ¶ 140.

An obviousness rejection predicated on selection of one or more components from numerous possible choices may be appropriate if the prior

⁴Although Agarwal characterizes glass fibers as a filler rather than as a reinforcement as recited in claim 1, the glass fibers would be expected to function as a reinforcement in the composition. *See In re Papesch*, 315 F.2d 381, 391 (CCPA 1963) (“From the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing.”).

art provides direction as to which of many possible choices is likely to be successful. *See PharmaStem Therapeutics, Inc. v. ViaCell, Inc.*, 491 F.3d 1342, 1364 (Fed. Cir. 2007). In our view, the above-cited disclosures in Agarwal provide direction as to which combinations of polymers and fillers are likely to be successful. *See Merck & Co., Inc. v. Biocraft Labs*, 874 F.2d 804, 807 (Fed. Cir. 1989) (explaining that the fact that a reference “discloses a multitude of effective combinations does not render any particular formulation less obvious”); *In re Corkill*, 771 F.2d 1496, 1500 . . . (Fed. Cir. 1985) (affirming an obviousness rejection of claims in light of prior art teaching that “hydrated zeolites will work” in detergent formulations, even though “the inventors selected the zeolites of the claims from among ‘thousands’ of compounds”). More specifically, the above-cited disclosures support the Examiner’s finding that one of ordinary skill in the art would have had a reasonable expectation of success in injection molding a composition comprising polybutylene terephthalate and platy talc particles to form an article, such as a housing for personal computers, display devices, and mobile electronic devices, having good mechanical properties. Further, Agarwal’s disclosure that combinations of talc and other preferred fillers, such as glass fibers, “are of specific utility,” Agarwal ¶ 79, supports the Examiner’s finding that the ordinary artisan would have included glass fibers in the composition.

Agarwal discloses that “[i]n one embodiment, the compositions comprise about 5 to about 99 wt. % matrix polymer component (including any impact modifier), about 0.5 to about 40 wt. % unencapsulated fluoropolymer, and about 0.5 to about 60 wt. % filler, each based on the total weight of the composition.” Agarwal ¶ 82. These amounts encompass those

recited in claim 1 for the polyalkylene terephthalate thermoplastic polyester resin (between 35% and 55% by volume) and platy talc particles (between 10% and 60% by volume). Agarwal explicitly discloses that “[t]he relative amounts of matrix polymer component, fluoropolymer, and filler may be adjusted by one of skill in the art *without undue experimentation*, in order to achieve the desired properties of the compositions.” *Id.* (emphasis added).

“[T]he existence of overlapping or encompassing ranges shifts the burden to the applicant to show that his invention would not have been obvious.” *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003).

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.”

In re Geisler, 116 F.3d 1465, 1469–70 (Fed. Cir. 1997) (quoting *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990)). We agree with the Examiner’s assessment of the Specification and Declarations under 37 C.F.R. § 1.132 (filed December 6, 2016, and June 24, 2017) as failing to provide persuasive evidence of unexpected results because the experimental testing described therein is not commensurate in scope with the claims, *see* Ans. 5–7, and the Appellant has not “provide[d] an adequate basis to support the conclusion that other embodiments falling within the claim will behave in the same manner,” *In re Kao*, 639 F.3d 1057, 1068 (Fed. Cir. 2011). *See also Ex parte Obiaya*, 227 USPQ 58, 60 (BPAI 1985) (“The fact that appellant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the difference would otherwise have been obvious.”).

All other arguments made by the Appellant have been fully addressed by the Examiner and are unpersuasive of error in the Examiner's conclusion of obviousness for the reasons explained in the Final Office Action and the Answer. *See, e.g.*, Ans. 3–9.

CONCLUSION

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1–3, 5, 12–15, 18	103(a)	Agarwal	1–3, 5, 12–15, 18	
7, 16	103(a)	Agarwal, Noguchi	7, 16	
8, 9	103(a)	Agarwal, Lambourne	8, 9	
Overall Outcome			1–3, 5, 7–9, 12–16, 18	

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