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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte MUHAMMAD MUMTAZ, KARIM AISSOU, CYRIL BROCHON, ERIC CLOUTET, GUILLAUME FLEURY, GEORGES HADZIIOANNOU, CHRISTOPHE NAVARRO, CELIA NICOLET, and XAVIER CHEVALIER

Appeal 2019-000067
Application 15/103,740
Technology Center 2800

Before BRADLEY R. GARRIS, KAREN M. HASTINGS,
and MICHAEL G. McMANUS, *Administrative Patent Judges*.

McMANUS, *Administrative Patent Judge*.

DECISION ON APPEAL

The Examiner finally rejected claims 1–10 of Application 15/103,740 under 35 U.S.C. §§ 102 and 103. Final Act. (Aug. 25, 2017) 2–5.

Appellants¹ seek reversal of these rejections pursuant to 35 U.S.C. § 134(a).

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

For the reasons set forth below, we AFFIRM.

¹ The Appellants are the Applicants, Centre National de la Recherche Scientifique (CNRS), Universite de Bordeaux, Institut Polytechnique de Bordeaux, and Arkema France, which are also identified as the real parties in interest. Appeal Br. 2.

BACKGROUND

The present application generally relates to a process for the creation of nanometric structures by self-assembly of block copolymers where at least one of the blocks has at least one liquid crystal phase or is crystallizable. Spec. 1. Materials made by the process described in the Specification may find use in the fields of lithography (lithography masks), information storage, porous membrane production, and catalyst support. *Id.*

Claim 1 is illustrative of the subject matter on appeal and is reproduced below:

1. A nanostructured assembly process using a composition comprising a block copolymer, at least one of the blocks of which is crystallizable or has at least one liquid crystal phase, wherein the process comprises the following steps:
 - dissolving the block copolymer in a solvent to form a solution,
 - depositing the solution on a surface,
 - annealing.

Appeal Br. 13 (Claims App.).

REJECTIONS

The Examiner maintains the following rejections:

1. Claims 1–5 and 8–10 are rejected under 35 U.S.C. § 102(a)(2) as anticipated by Kim et al.² Final Act. 2–4.
2. Claims 6 and 7 are rejected under 35 U.S.C. § 103 as obvious over Kim. *Id.* at 4–5.

² US 2013/0224442 A1, published Aug. 29, 2013 (“Kim”).

DISCUSSION

Rejection 1. The Examiner rejects claims 1–5 and 8–10 as anticipated by Kim. *Id.* at 2–4. In support of this rejection, the Examiner finds that Kim teaches a block copolymer where at least one of the blocks is crystallizable or has at least one liquid crystal phase. *Id.* at 2. The Examiner further finds that Figures 2(a) – 4D of Kim teach a copolymer having a crystallizable block (claim 3) and a liquid crystal phase (claims 4 and 5). *Id.* at 3. In response to Appellants’ arguments made during prosecution, the Examiner finds that “there are [a] number of copolymers [taught by Kim] that have crystalline or liquid crystalline character that [are] used for fabrication of liquid crystal displays.” *Id.* at 5; *see also id.* at 5–6 (citing Kim ¶ 29).

Appellants argue that the Examiner has not shown that Kim discloses that at least one of the blocks of the block copolymers are crystallizable or have at least one liquid crystal phase. Appeal Br. 7–9.

First, in regard to the Examiner’s findings regarding the use of certain polymers in liquid crystal displays, Appellants argue that “there is a difference between block copolymers that can be used for a liquid crystal display and a block copolymer wherein *at least one of the blocks is itself a liquid crystal.*” *Id.* at 8 (italics in original).

Second, Appellants take issue with the Examiner’s findings regarding the glass transition temperature of certain polymers. *Id.* at 8–9. Appellants assert that it is “well-known in the art that a wide range in the glass transition temperature of a polymer is not related to the crystallinity.” *Id.* (underscoring in original). These findings were subsequently withdrawn by the Examiner. Answer 6.

Appellants additionally assert that there is no mention in Kim of crystallinity. Appeal Br. 11.

The Examiner has the initial burden of establishing a prima facie case of obviousness based on an inherent or explicit disclosure of the claimed subject matter under 35 U.S.C. § 103(a). *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992) (“[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a prima facie case of unpatentability.”).

As the Court of Appeals for the Federal Circuit explained:

[T]he PTO carries its procedural burden of establishing a prima facie case when its rejection satisfies 35 U.S.C. § 132, in “notify[ing] the applicant . . . by stating the reasons for [its] rejection, or objection or requirement, together with such information and references as may be useful in judging of the propriety of continuing the prosecution of [the] application.”

In re Jung, 637 F.3d 1356, 1362 (Fed. Cir. 2011) (quoting 35 U.S.C. § 132).

Here, the Examiner has made a finding that Kim teaches a block copolymer where “at least one of the blocks of which is crystallizable or has at least one liquid crystal phase.” Final Act. 2; *see id.* at 5–6. The Examiner further finds that the block structure shown in Figure 2 of Kim is “formed due to liquid-crystal phase of the block copolymer.” Answer 5. The Examiner additionally finds that Kim teaches the use of liquid crystal or crystallizable blocks in terms of the Flory-Huggins interaction parameters of the blocks. *Id.* at 6 (citing Kim ¶¶ 79–83, 131). As persons of scientific competence in the fields in which they work, examiners are responsible for making findings, informed by their scientific knowledge, as to the meaning of prior art references to persons of ordinary skill in the art. Absent legal

error or contrary factual evidence, those findings can establish a prima facie case of obviousness. *In re Berg*, 320 F.3d 1310, 1315 (Fed. Cir. 2003).

Appellants offer argument disputing the factual accuracy of the Examiner's findings underlying the rejection of claim 1. *See* Appeal Br. 7–9. Appellants do not, however, cite to factual evidence of record showing error in the Examiner's finding. Attorney argument is not evidence. *See, e.g., Gemtron Corp. v. Saint-Gobain Corp.*, 572 F.3d 1371, 1380 (Fed. Cir. 2009) (“[U]nsworn attorney argument . . . is not evidence and cannot rebut . . . other admitted evidence”); *Estee Lauder, Inc. v. L'Oréal, S.A.*, 129 F.3d 588, 595 (Fed. Cir. 1997) (an argument made by counsel in a brief does not substitute for evidence lacking in the record).

In the Answer, the Examiner finds that at least one of the blocks of the block copolymers being crystallizable or having at least one liquid crystal phase is “an inherent and unique f[ea]ture of these block copolymers.” Answer 7. In their Reply, Appellants argue that Kim does not teach a block copolymer that inherently requires a block to be crystallizable or have at least one liquid crystal phase. Reply Br. 1–3; *see, e.g., id.* at 2 (“It is well-known in the art that the Flory-Huggins interaction parameter does not provide information about whether a material is crystalline, semi-crystalline or liquid crystalline.”). Appellants' statements in support of their position, however, are not directly supported by factual evidence of record.

Absent citation to factual evidence of record demonstrating error in the Examiner's findings, Appellants have not set forth an adequate basis for reversal of the rejection of claim 1. Appellants rely upon their arguments presented in regard to the remaining claims which depend from claim 1. Appeal Br. 12. As we have found such arguments to be unpersuasive, Appellants have not shown error in this regard.

The same is true of Appellants' allegations of error in regard to the rejection of claims 3, 4, and 5. *See* Appeal Br. 9–11. On appeal, Appellants argue that the portions of Kim relied upon by the Examiner do not adequately support the Examiner's findings. *Id.* Appellants, however, do not cite to factual evidence of record showing error in such findings.

Rejection 2. The Examiner rejects claims 6 and 7 as obvious over Kim. Final Act. 4–5. Appellants assert error on the same basis as described above. Appeal Br. 12. As we have found these arguments to be unpersuasive, Appellants have not shown error with regard to the rejection of claims 6 and 7.

CONCLUSION

The rejection of claims 1–5 and 8–10 as anticipated by Kim is affirmed. The rejection of claims 6 and 7 as obvious over Kim 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