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MCAFFEE & TAFT TENTH FLOOR, TWO LEADERSHIP SQUARE 211 NORTH ROBINSON OKLAHOMA CITY, OK 73102			FORREST, MICHAEL	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte BELA DERECSEKI, MARK D. POMPONI, and
VENKATA R. SAMA

Appeal 2019-005739
Application 14/812,280
Technology Center 1700

Before MAHSHID D. SAADAT, DONNA M. PRAISS, and
BRIAN D. RANGE, *Administrative Patent Judges*.

PRAISS, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–4, 6–11, 14–16, 19–28, and 31–34.² 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. Appellant identifies TRONOX LLC as the real party based on its acquisition of Cristal Inorganic Chemicals Switzerland Ltd. Reply Br. 1; Appeal Br. 2.

² Claims 5, 12, 13, 17, 18, 29, and 30 were canceled in an Amendment Under 37 C.F.R. § 1.116 filed Aug. 22, 2017, that was entered for purposes of this Appeal. Advisory Action dated Sept. 27, 2017. We note pending claim 31 depends from canceled claim 30. Appeal Br. 10 (Claims Appendix).

STATEMENT OF THE CASE

The invention relates to the production of titanium dioxide, and, more particularly, to controlling particle size during the production of titanium dioxide. Spec. ¶ 1. Claim 1, reproduced below, is illustrative of the subject matter on appeal (disputed limitations are italicized).

1. A method for producing titanium dioxide particles comprising:
 - a) *introducing titanium tetrachloride, oxygen, and an agent to an oxidizer; wherein the agent comprises ultrafine titanium dioxide particles; and wherein the ultrafine titanium dioxide particles are in a form selected from the group consisting of anatase, rutile, amorphous, and combinations thereof; and*
 - b) oxidizing at least some of the titanium tetrachloride with at least some of the oxygen in the presence of the agent to form an oxidizer effluent comprising a titanium dioxide product having titanium dioxide particles,
*wherein the ultrafine titanium dioxide particles are introduced to the oxidizer in an amount of from about 50 ppmw to about 100 ppmw, based on the total weight of the titanium dioxide particles produced in step b), and*wherein a Group Ia metal halide is also introduced as a part of the agent into the oxidizer in an amount from about 10 ppmw to about 950 ppmw, based on the total weight of the titanium dioxide particles produced in step b).

Appeal Br. 6 (Claims Appendix).

ANALYSIS

We review the appealed rejections for error based upon the issues Appellant identifies, 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 examiner’s rejections.”). After considering the argued claims and each of Appellant’s arguments, we are not persuaded of reversible error in the appealed rejections.

The Examiner maintains the rejection of claims 1–4, 6–11, 14–16, 19–28, and 31–34 under 35 U.S.C. § 103(a) over the following prior art references:

Name	Reference	Date
Jamison	US 2008/0075654 A1	Mar. 27, 2008
Gruber	US 2010/0215569 A1	Aug. 26, 2010

Appellant argues claims 1–4, 6–11, 14–16, 19–28, and 31–34 subject to the rejection as a group. Appeal Br. 4–6. Therefore, claims 2–4, 6–11, 14–16, 19–28, and 31–34 stand or fall with independent claim 1, which we select as representative. 37 C.F.R. § 41.37(c)(1)(iv).

Appellant contends the Examiner erred in rejecting claim 1 because neither Jamison nor Gruber discloses a step of adding ultrafine titanium dioxide and Gruber’s “very fine particles” produced *in situ* have not been shown to have the required properties of size and function. Appeal Br. 5–6. Appellant argues it would have been nonsensical for a person having ordinary skill in the art to add more titanium dioxide particles to Gruber’s process in view of Gruber’s disclosure that a second reaction pathway in which titanium chloride can attach to the surface of existing titanium dioxide particles increases the size of existing particles by surface reaction rather than form new particles. *Id.* at 6 (citing Gruber ¶ 12).

Appellant's arguments are not persuasive of error. Appellant acknowledges that Gruber discloses producing "very fine particles." Appeal Br. 5. Appellant does not dispute the Examiner's finding (Final Act. 3) that Gruber teaches its pigment particles are nanoscale in size and finer than Jamison's particles, which Jamison discloses are 300 nm. The record supports the Examiner's findings. Gruber ¶ 21 (disclosing "finer" particles compared to Jamison's particles); Jamison ¶¶ 14, 15, 17 (Examples). Therefore, Appellant's argument that the size of Gruber's *in situ* produced nucleating titanium dioxide particles introduced into the second stage do not meet the claim requirement of "ultrafine" is not supported by the preponderance of the evidence cited in this appeal record.

Appellant's argument that none of the cited references explicitly teach a step of adding ultrafine titanium dioxide is not persuasive because an obviousness analysis "need not seek out precise teachings directed to the specific subject matter of the challenged claim." *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007). Based on Gruber's teachings for controlling the size of TiO₂ particles, the Examiner reasonably determines (Final Act. 3) it would have been obvious to a person having ordinary skill in the art to introduce to a second stage an amount of nucleating agent produced in the first stage that meets the ultrafine size requirement. Gruber's method of controlling the mean particle size of the product, by setting an amount of TiCl₄ introduced as a percentage of the total TiCl₄ introduced in all stages, does not depend on the use of KCl to control the size of the particles. As such, it would have been obvious to a person having ordinary skill in the art to control the concentration of very fine TiO₂ nucleating agent to any

workable range including 50 to 100 ppmw, and thereby control the size of the titanium oxide particles produced.

In the Reply Brief, Appellant presents additional arguments challenging the Examiner's finding that Gruber's very fine particles meet the required "ultrafine" size and that the claimed concentration range of 50 to 100 ppmw would have been obvious to achieve based on Gruber's method of controlling the size of the titanium oxide particles. Reply Br. 6–17. These arguments were not presented in the Appeal Brief, and Appellant has not proffered a showing of good cause explaining why the argument could not have been presented in the Appeal Brief. Therefore, we will not consider these new and untimely arguments in our assessment of the Examiner's rejection. 37 C.F.R. §§ 41.37, 41.41.

Regarding Appellant's assertion that the term "ultrafine" as it relates to titanium dioxide is understood by persons skilled in the art to refer to a particle size in the range 1–20 nm (Reply Br. 14–16), such a limited interpretation of the claim term is not supported by Appellant's Specification. According to Appellant's Specification, "at least a portion of the ultrafine titanium dioxide particles can be in the form of agglomerated ultrafine titanium dioxide particles, and the median size of such agglomerated ultrafine titanium dioxide particles can range from about 2 nm to about 150 nm." Spec. ¶ 13. Appellant's Specification further describes "discrete ultrafine titanium dioxide particles can range from about 1 nm to about 60 nm." *Id.* Therefore, the Specification does not support the claimed "ultrafine" particles being below 20 nm in size as Appellant contends. Moreover, claim 1 does not specify whether the claimed particle size is for agglomerated or discrete ultrafine titanium dioxide particles. In addition,

claim 1 requires the agent “comprises ultrafine titanium dioxide particles” which does not exclude titanium dioxide particles outside of an “ultrafine” range in particle size.

Appellant also argues Gruber teaches away from the use of a Group Ia metal halide such as KCl based on the disclosure that “inhibitors [KCl or another growth inhibitor] are highly corrosive, resulting in increased corrosion of the equipment and a greater maintenance effort.” Appeal Br. 6. (citing Gruber ¶ 13); Reply Br. 17–18. Appellant notes that none of Gruber’s examples use any growth inhibitor. *Id.* (citing Gruber ¶ 24).

Appellant’s arguments are not persuasive of error principally because Gruber explicitly discloses that “at least a smaller quantity” of KCl compared to conventional methods can be used in Gruber’s process. Gruber ¶ 22. In a determination of obviousness, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, which in this case includes the use of KCl in an agent to an oxidizer. *See Merck & Co. v. Biocraft Labs. Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (“That the [prior art] patent discloses a multitude of effective combinations does not render any particular formulation less obvious.”).

Appellant’s reliance on Gruber’s examples as support for the asserted teaching away is not persuasive because “a reference is not limited to the disclosure of specific working examples.” *In re Mills*, 470 F.2d 649, 651 (CCPA 1972) (citation omitted). Similarly, Appellant’s reliance on Gruber’s disclosure of KCl’s disadvantages in the context of conventional methods is not persuasive of error, because Gruber explicitly teaches an alternative method that includes a smaller quantity of KCl than conventionally used. A reference “that ‘merely expresses a general preference for an alternative

invention but does not criticize, discredit, or otherwise discourage investigation into' the claimed invention does not teach away." *Meiresonne v. Google, Inc.*, 849 F.3d 1379, 1382 (Fed. Cir. 2017) (quoting *Galderma Labs., L.P. v. Tolmar, Inc.*, 737 F.3d 731, 738 (Fed. Cir. 2013)).

In sum, we are not persuaded that a person having ordinary skill in the art would understand Gruber's teachings to be limited in a way that excludes the use of KCl.

The preponderance of the evidence in this appeal record therefore supports the Examiner's conclusion that the claimed subject matter would have been obvious in view of Gruber's method. Accordingly, we affirm the Examiner's rejection of claim 1 under 35 U.S.C. § 103(a) for the above reasons and those provided by the Examiner.

Because we find Appellant's arguments unpersuasive of error in the Examiner's rejection of claim 1 for the reasons discussed above, we likewise affirm the Examiner's rejection of claims 2-4, 6-11, 14-16, 19-28, and 31-34 for the same reasons.

CONCLUSION

For these reasons and those the Examiner provides, we uphold the Examiner's rejection of claims 1-4, 6-11, 14-16, 19-28, and 31-34 under 35 U.S.C. § 103(a) as obvious over the cited prior art references.

DECISION SUMMARY

In summary:

Claim(s) Rejected	35 U.S.C. §	References/Basis	Affirmed	Reversed
1-4, 6-11, 14-16, 19- 28, 31-34	103(a)	Gruber, Jamison	1-4, 6-11, 14-16, 19- 28, 31-34	

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)(1)(iv).

AFFIRMED