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Row 1: 11/920,111, 11/19/2008, Zheng Chen, 24250309-001001, 2459
Row 2: 23562, 7590, 02/01/2019, BAKER & MCKENZIE LLP, PATENT DEPARTMENT, 1900 North Pearl Street, Suite 1500, DALLAS, TX 75201, EXAMINER PURDY, KYLE A, ART UNIT 1611, PAPER NUMBER, NOTIFICATION DATE 02/01/2019, DELIVERY MODE ELECTRONIC

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ZHENG CHANG and JAMES MICHAEL McHALE, ¹

Appeal 2017-005755
Application 11/920,111
Technology Center 1600

Before ULRIKE W. JENKS, JOHN E. SCHNEIDER, and
RACHEL H. TOWNSEND, *Administrative Patent Judges*.

SCHNEIDER, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal² under 35 U.S.C. § 134 of the Examiner's rejection of claims to a multilayer antimicrobial glaze which have been rejected as obvious. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ Appellants identify the Real Party in Interest as Ideal Standard International BVBA. Appeal Br. 3.

² We have considered and herein refer to the Specification of Nov. 8, 2007 ("Spec."); Non-Final Office Action of July 29, 2015 ("Non-Final Act."); Appeal Brief of Feb. 29, 2016 ("Appeal Br."); Examiner's Answer of Des. 22, 2016 ("Ans."); and Reply Brief of Feb. 22, 2017 ("Reply Br.").

STATEMENT OF THE CASE

Certain metals, including silver and zinc exhibit antimicrobial activity. Spec. 1. While silver is more effective against certain bacteria, zinc, in the form of zinc oxide, is more effective against fungi. *Id.* In addition, zinc is less expensive. *Id.* While it is considered desirable to incorporate zinc into glazes to impart antimicrobial properties to ceramic and enamel products, efforts to produce such products have been hampered by the fact that it is difficult to incorporate significant amounts of zinc into glazes. *Id.* at 2

The Specification describes a two layer glaze wherein one layer contains a high level of zinc oxide. Spec. 3.

Claims 1–5, 25–28, 39, and 40 are on appeal.³ Claim 1 is representative of the claims and reads as follows:

1. A multilayer antimicrobial glaze/enamel, comprising:
 - a base glaze layer, wherein the base glaze layer comprises less than about 8.0 percent by weight ZnO; and
 - a top glaze layer, wherein the top glaze layer comprises about 8.0 percent by weight to about 35.0 percent by weight ZnO,
 - wherein the base glaze layer is between about 300 μm and 1000 μm in thickness;
 - wherein the top glaze layer is between about 25 μm and 250 μm in thickness;
 - wherein relative thicknesses and concentrations of the top glaze layer and base glaze layer are such that a total concentration of the multilayer antimicrobial glaze/enamel is less than about 5.0 percent by weight ZnO; and

³ Claims 6–14, 18–24 are pending in the application but have been withdrawn from consideration. Non-Final Act. 1.

wherein the multilayer antimicrobial glaze/enamel is substantially free of surface defects.

The claims stand rejected as follows:

Claims 1–5, 39, and 40 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Tomioka.⁴

Claims 25–28 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Tomioka in view of Ando.⁵

DISCUSSION

Issue

As discussed below, the issue presented by both rejection is the same. Therefore we will address the rejections together.

The Examiner finds that Tomioka is directed to sanitary ware having a coating comprising at least two layers of glazes. Non-Final Act. 4. The Examiner finds that Tomioka teaches a base layer having a thickness of from 100 to 1000 μm and contains up to 20% by weight of a pigment. *Id.* The Examiner also finds that Tomioka teaches a top layer having a thickness of from 100 to 500 μm and comprising up to 11% zinc oxide. *Id.* at 5. The Examiner finds that Tomioka teaches that the surface of the multilayer glaze would be substantially free of defects as recited in the claims. *Id.* With respect to the concentrations of zinc oxide and thicknesses of the layers, the Examiner finds that these parameters would have been obvious to one skilled in the art and the ranges overlap and the determination of the

⁴ Tomioka et al., US 6,383,646 B1, issued May 7, 2002 (“Tomioka”).

⁵ Ando et al., JP 2000-044368, published Feb. 15, 2000 (“Ando”). Citations are to the English translation of record.

optimum values would have been well within the ability of one skilled in the art. *Id.* at 5–6. The Examiner also finds that having a base layer that is thicker than the top layer is an option that one skilled in the art would have considered based on the teachings of Tomioka. *Id.* at 6. The Examiner concludes “the invention as a whole is *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in absence of evidence to the contrary.” *Id.* at 7.

Appellants contend that Tomioka is silent with respect to the relative thicknesses and concentrations of zinc oxide in the respective layers. Appeal Br. 8. Appellants argue that the Examiner has not shown why one skilled in the art would have been motivated to use the concentrations or thicknesses recited in the claims nor has the Examiner explained why one skilled in the art would create a composition where the zinc oxide concentration in the multilayer structure is less than about 5 percent by weight. *Id.* at 9. Appellants contend that Ando does not cure the deficiency of Tomioka. *Id.* Appellants argue that the Examiner has engaged in impermissible hindsight in making the rejection. *Id.* at 11. Appellants contend that the Examiner failed to properly consider evidence of unexpected results. *Id.* at 13.

The issue with respect to both rejection is whether a preponderance of the evidence supports the Examiner’s conclusion that the subject matter of

the claims would have been obvious over Tomioka alone or in combination with Ando.

Principles of Law

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. ‘[The Examiner] can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.’ The patent applicant may then attack the Examiner’s *prima facie* determination as improperly made out, or the applicant may present objective evidence tending to support a conclusion of nonobviousness.

In re Fritch, 972 F.2d 1260, 1265 (Fed. Cir. 1992) (citations omitted).

Most if not all inventions arise from a combination of old elements. Thus, every element of a claimed invention may often be found in the prior art. However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. Rather, to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant.”

In re Kotzab, 217 F.3d 1365, 1369-70 (Fed. Cir. 2000).

Analysis

We have considered the arguments advanced by both the Examiner and Appellants and find that Appellants have the better position. We find that Tomioka does not teach or suggest a multilayer composition where the thickness of and concentration of zinc oxide in each layer results in a

multilayer structure containing less than about 5% by weight zinc oxide. We also find that the Examiner has not adequately explained why one skilled in the art would have been motivated to modify the multilayer structure taught by Tomioka to create such a structure.

The Examiner contends that based on the teachings of Tomioka, one skilled in the art could create a multilayer structure having a base layer 700 μm thick and containing 3% by weight zinc oxide and a top layer with a thickness of 100 μm and containing 10% zinc oxide. Ans. 8. The Examiner notes that these values are within the ranges taught by Tomioka and within the ranges recited in the present claims. *Id.* at 9. The Examiner then uses these values to calculate a total concentration of zinc oxide for the multilayer structure of 3.88%. *Id.*

The Examiner's argument is unpersuasive. While the values selected by the Examiner would yield a total zinc oxide concentration of less than 5% by weight for the entire multilayer structure, the Examiner has not explained why one skilled in the art would have been motivated to select those values or why one skilled in the art would want to develop a multilayer structure having less than 5% by weight zinc oxide. This is especially significant as selection of other values for zinc oxide concentration and thickness of the layers can result in zinc oxide concentrations for the entire structure of greater than 5% by weight. For Example, using the same values as the Examiner except increasing the base concentration to 6% (still within the scope of the claims and the teachings of Tomioka), the calculated zinc oxide

concentration for the multilayer structure is 6.5% by weight
((6%)(0.875)+(10%)(0.125)).

Having failed to explain why one skilled in the art would have been motivated to select relative thickness and concentrations from within the ranges taught by Tomioka to arrive at a total concentration of the multilayer glaze that has less than about 5% by weight zinc oxide as required by the claims, the Examiner has not established a prima facie case of obviousness.

Conclusion of Law

We conclude that a preponderance of the evidence does not support the Examiner's conclusion that the subject matter of the claims would have been obvious over Tomioka alone or combined with Ando.

SUMMARY

We reverse the rejections under 35 U.S.C. § 103(a).

REVERSED