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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte ADOLPHE FOYET, WAN ZHANG-BEGLINGER, and MARGIT CLAUSS

Appeal 2019-004184
Application 14/186,081
Technology Center 1700

Before JEFFREY T. SMITH, MICHELLE N. ANKENBRAND, and MONTÉ T. SQUIRE, *Administrative Patent Judges*.

SMITH *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant[1] appeals from the Examiner's decision to reject claims 8, 13, and 18–21. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

[1] 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 The Dow Chemical Company. Appeal Br. 2.

The rejection of claims 8, 13, and 18–21 under 35 U.S.C. § 103 as unpatentable over Tsuji (US 7,628,903 B1, issued Dec. 8, 2009) in view of Lewis (GB 1,283,024, published July 26, 1972), Romer (US 2013/0256145 A1, published Oct. 3, 2013) and Lee (EP 2,626,449 A2, published Aug. 14, 2013) is presented for review.

Appellant's invention relates generally to methods of electroplating a uniform matte silver deposit where silver is electroplated at high speeds and provides a substantially uniform matte silver deposit with good hardness, ductility, and conductivity. (Spec. 1.) Independent claim 8 is representative and is reproduced below:

> 8. A method of electroplating silver comprising:
>
> a) contacting a substrate with an acidic silver electroplating composition consisting of one or more sources of silver ions, wherein the one or more sources of silver ions are in amounts of 10 g/L to 80 g/L, one or more alkanesulfonic acids in amounts of 20 g/L to 250 g/L, telluric acid in amounts of 200 mg/L to 800 mg/L, water, a pH of 1 to less than 1, one or more optional compounds chosen from suppressors, surfactants and grain refiners, one or more dihydroxy bisulfide compounds in amounts of 10 g/L to 80 g/L, wherein the one or more dihydroxy bisulfide compounds are chosen from 2,4-dithia-1,5-pentanediol, 2,5-dithia-1,6-hexanediol, 2,6-dithia-l,7-heptanediol, 2,7-dithia-1,8-octanediol, 3,5-dithia-l,7-heptanediol, and 3,6-dithia-1,8-octanediol, and one or more mercaptotetrazoles in amounts of 5 g/L to 160 g/L, wherein the one or more mercaptotetrazoles are chosen from l-(2-dimethylaminoethyl)-5-mercapto-1,2,3,4-tetrazole, and l-(2-diethylaminoethyl)-5-mercapto-1,2,3,4-tetrazole, the acidic silver electroplating composition is substantially free of cyanide, wherein a ratio of a concentration of the one or more mercaptotetrazoles to a concentration of the one or more dihydroxy bis-sulfide compounds is 0.5:1 to 2:1; and

b) electroplating uniform matte silver on the substrate with the acidic silver electroplating composition at a current density from 2-26 A/dm^2 and a temperature of 60-70 °C.

Appeal Br. 9, Claims Appendix.

OPINION

Having considered the respective positions the Examiner and Appellant advance in light of this appeal record, we reverse the Examiner's rejections based on the arguments Appellant presents. We add the following.

We limit our discussion to independent claim 8.

The dispositive issue on appeal is:

Did the Examiner reversibly err in determining that a person of ordinary skill in the art would have combined the teachings of Tsuji, Lewis, Romer, and Lee to perform a method of electroplating uniform matte silver from an acid silver electroplating composition comprising telluric acid in amounts as independent claim 8 requires? [2]

We answer this question in the affirmative.

The Examiner finds Tsuji teaches a method of electroplating silver comprising contacting a substrate with an acidic silver electroplating composition. (Ans. 3.) The Examiner finds Tsuji differs from the claimed invention by not disclosing the composition includes telluric acid in amounts of 200 mg/L to 800 mg/L, as independent claim 8 requires. (Ans. 4–5.) The

[2] The Examiner further cites Lee for describing the obviousness of including mercaptotetrazole compounds in the electroplating bath, subject matter not related to the dispositive issue. (Ans. 8.)

Examiner finds Lewis and Romer teach it was known to include brighteners, specifically tellurium in the electrolytes used in the electroplating of silver for the purpose of brightening the deposit. (Ans. 6.) The Examiner determines it would have been obvious to one of ordinary skill in the art to perform Tsuji's method of electroplating silver including telluric acid in amounts the claimed invention requires because Lewis and Romer each teaches it was known to include brighteners in the electrolytes used in the electroplating bath for silver. (Ans. 5–6).

Appellant argues the combination of Tsuji, Lewis, Romer, and Lee fails to establish the obviousness of the claimed invention. (Appeal Br. 4–8.) Appellant argues Tsuji discloses depositing silver with various metals that do not include telluric acid in the silver baths for any reason. (Appeal Br. 7.) Appellant argues Lewis, Romer, and Lee teach away from the presently claimed method because the references teach including tellurium in silver plating baths to provide a bright, not a matte deposit. (Appeal Br. 7.) Appellant argues further the Examiner's rejection is premised on hindsight. (Appeal Br. 8.)

During examination, the Examiner bears the initial burden of establishing a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)); *see also Ball Aerosol & Specialty Container, Inc. v. Ltd. Brands, Inc.*, 555 F.3d 984, 993 (Fed. Cir. 2009) ("[T]he analysis that 'should be made explicit'

refers not to the teachings in the prior art of a motivation to combine, but to the court's analysis.").

The Examiner's rejection is premised on performing the method of depositing silver as disclosed by Tsuji including telluric acid as a brightener. (Ans. 4–6.) Tsuji discloses the suitability of including brighteners in the plating process. (Tsuji col. 13.) In fact, Tsuji provides explicit concrete examples of suitable brighteners, wherein none of the cited suitable brighteners include telluric acid. (Tsuji col. 16.) Notwithstanding this distinction, the Examiner turns to Lewis, Romer, and Lee for describing it was known to utilize telluric acid as a brightener in silver plating baths. However, the Examiner has failed to identify a teaching in any of the cited references that suggests the inclusion of telluric acid as a brightener in silver plating bath has advantages that outweigh Tsuji's failure to include telluric acid in the list of suitable concrete examples.

Accordingly, a preponderance of the evidence supports Appellant's position that the Examiner is using impermissible hindsight to provide a basis for including telluric acid as a brightener in Tsuji's silver plating bath. The presently claimed method is directed to electroplating a uniform matte silver deposit, not a bright or semi-bright silver deposit as disclosed in Tsuji, Lewis, Romer, and Lee. The Examiner fails to adequately explain why a person of ordinary skill in the art would have looked to include a brightener —not included in the specific "concrete examples" of suitable brighteners provided in Tsuji—to form a uniform matte silver deposit. The Examiner does not adequately explain why the skilled artisan's knowledge or inferences and creativity would have supported the obviousness determination based on the teachings of the applied references without an

improper hindsight reconstruction. The Examiner also does not provide an adequate technical explanation with the requisite rational underpinning of why or how one skilled in the art, absent impermissible hindsight, would have combined the teachings of Tsuji, Lewis, Romer, and Lee to arrive at the claimed method of electroplating silver as required by independent claim 8. The fact finder must be aware "of the distortion caused by hindsight bias and must be cautious of arguments reliant upon *ex post* reasoning." *KSR*, 550 U.S. at 421 (citing *Graham v. John Deere Co.*, 383 U.S. 1, 36 (1966) (warning against a "temptation to read into the prior art the teachings of the invention in issue")).

Accordingly, we reverse the § 103 rejection on appeal.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
8, 13, 18–21	103	Tsuji, Lewis, Romer, Lee		8, 13, 18–21

REVERSED