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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SATOSHI YUASA

Appeal 2019-000521
Application 11/704,805
Technology Center 1700

Before JEFFREY T. SMITH, WESLEY B. DERRICK, and
JANE E. INGLESE, *Administrative Patent Judges*.

SMITH, *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, 3, 5, and 6. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

STATEMENT OF THE CASE

Appellant's invention is generally directed to a method for electroplating a metal material with a tin-zinc alloy plating bath. (Br. 2.)

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 DIPSOL CHEMICALS CO., LTD. (Br. 2.)

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

1. A method for electroplating a metal material with a tin-zinc alloy plating bath to produce a metal plated with a tin-zinc alloy, said method comprising:

(a) contacting said metal material with a tin-zinc alloy plating bath which has a pH of 2 to 10 and comprises
a tin ion in a concentration of 1 to 100 g/L,
a zinc ion in a concentration of 0.2 to 80 g/L,
a hydroxycarboxylic acid or a salt thereof in a concentration of 0.25 to 3 mol/L, and
a water-soluble compound obtained by a reaction of an aliphatic amine, an organic acid ester and a phthalic anhydride;

at a plating bath temperature of 40 to 90°C; and
(b) stirring at a plating bath stirring rate of 30 to 60 m/min wherein said stirring is carried out by a plating apparatus of a jet flow system in which the bath solution is circulated with a pump or by a plating apparatus for steel sheets;

at a cathode current density of 40 to 80 A/dm²;
wherein said hydroxycarboxylic acid is selected from the group consisting of citric acid, tartaric acid, malic acid, glyceric acid, lactic acid, β-hydroxypropionic acid and gluconic acid,
wherein the plating bath does not include an alkanesulfonic acid,

further wherein the plating bath does not include an alkanolsulfonic acid,

further wherein the plating bath does not include a polyalkylene glycol.

Br. 25, Claims Appendix (paragraphing added).

The following rejections are presented for our review:

I. Claims 1, 3, 5, and 6 are rejected under 35 U.S.C. § 103(a) as unpatentable over JP 2000-26991 (JP '991), Sakurai (US 5,618,402 issued

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April 8, 1997), Velasquez (US 5,985,106 issued Nov. 16, 1999), and Kadija (US 4,749,626, issued June 7, 1998).

II. Claims 1, 3, and 6 are rejected under 35 U.S.C. § 103(a) as unpatentable over Crosby (US 2002/0187355 A1, published Dec. 12, 2002) Sakurai (US 5,618,402 issued April 8, 1997), Kawaguchi (US 2003/0111339 A1, published June 19, 2003) and Kadija.

III. Claim 5 is rejected under 35 U.S.C. § 103(a) as unpatentable over Crosby, Sakurai, Kawaguchi, Kadija, and Jordan (US 2002/0046954 A1, published April 25, 2002).

OPINION

After review of the respective positions provided by Appellant and the Examiner, we AFFIRM the Examiner's rejections under 35 U.S.C. § 103(a). The Examiner has reproduced the rejections on appeal in the Examiner's Answer. (Ans. 3–18.)

Claims 1, 3, 5, and 6 are rejected under 35 U.S.C. § 103(a) as unpatentable over JP '991, Sakurai, Velasquez, and Kadija.²

We affirm the rejection for the reasons and responses to Appellant's arguments presented by the Examiner. We add the following for emphasis.

Appellant argues the Examiner has not provided motivation to modify JP '991 to include a water-soluble compound in the plating bath as required by independent claim 1. (Br. 8–9.)

² Appellant argues claims 1, 3, 5, and 6 together. *See generally* Appeal Brief. Therefore, we select claim 1 as representative, and claims 3, 5, and 6 will stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv) (2015).

Appellant's argument is not persuasive. Sakurai teaches the suitability of including a brightener additive in a tin zinc-alloy electroplating bath. (Sakurai 3, ll. 35–39). As such, a person of ordinary skill in the art would have recognized the suitability of including a water soluble brightener in an electroplating bath for a tin-zinc alloy. Appellant has not directed us to evidence that establishes that the inclusion of a water soluble brightener in an electroplating bath for a tin-zinc alloy was unknown to persons of ordinary skill in the art prior to this invention.

Appellant argues the person of ordinary skill in the art would not have combined the teachings of JP '991, Sakurai, Velasquez, and Kadija given the differences in the disclosures of each of the cited references. (Br. 9.)

Appellant's argument is not persuasive. Appellant's argument does not address the specific reasons identified by the Examiner for combining the teachings of the cited references. Appellant has failed to provide technical reasoning explaining error in the Examiner's findings and reasons for citing the references. *See In re Baxter Travenol Labs.*, 952 F.2d 388, 392 (Fed. Cir. 1991) ("It is not the function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art.").

Appellant argues the examples of JP '991 would not have motivated a person of ordinary skill in the art to develop the subject matter of independent claim 1. Appellant argues there is no motivation in JP '991 that would cause one of ordinary skill in the art to replace any of the acids in the examples with one of Appellant's specifically recited hydroxycarboxylic acids in a concentration of 0.25 to 3 mol/L as specified by independent claim 1. (Br. 10–11.) Appellant argues JP '991, including paragraph 19, does not

provide a suggestion to use any of gluconic acid, tartaric acid, citric acid, malic acid, and lactic acid in a tin-zinc alloy plating bath as required by the independent claim 1. (Br. 11.)

Appellant's arguments lack persuasive merit. A reference is available for all that it teaches to a person of ordinary skill in the art. *In re Inland Steel Co.*, 265 F.3d 1354 (Fed. Cir. 2001); *Merck & Co. v. Biocraft Labs., Inc.*, 874 F.2d 804, 807 (Fed. Cir. 1989) ("the fact that a specific [embodiment] is taught to be preferred is not controlling, since all disclosures of the prior art, including unpreferred embodiments, must be considered") (quoting *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976)). Appellant has not disputed that JP '991 teaches gluconic acid, tartaric acid, citric acid, malic acid, and lactic acid as complexing agents suitable for use in electroplating baths. (JP '991 ¶ 19.) JP '991 further discloses the complexing agent is present in amounts that encompass the claimed invention. (JP '991 ¶ 20.)

Appellant argues JP '991 does not exhibit current densities higher than 20 A/dm² and Sakurai's preferred density range of 0.1 to 10 A/dm² teaches away from the cathode current density of 40 to 80 A/dm² required by independent claim 1. (Br. 11–12.)

This Argument is unavailing. The Examiner finds JP '991 teaches the cathode current density is preferably 0.05 to 50 A/dm² (page 15, [0095]). (Ans. 4; JP '991 ¶ 15.) This preferred range overlaps the range of the claimed invention. Such an overlapping range, especially when there is substantial overlap as here, has been held to be at least prima facie obvious. *See In re Malagari*, 499 F.2d 1297, 1303, (CCPA 1974); *cf. Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1346–48 (Fed. Cir. 1999).

Appellant argues there is no disclosure or suggestion in either Velasquez or Kadija of stirring a plating bath at a stirring rate of 30 to 60 m/min in a method as recited in claim 1. (Br. 13.)

This Argument is unavailing. The Examiner finds Velasquez teaches plating a tin-zinc alloy in a continuous rack plater and Kadija teaches a method for electroplating a tin-containing coating on a substrate material utilizing flow rates in the range of about 2 cm/sec to about 100 cm/sec. (1.2 m/min to 60 m/min) amounts that encompass the claimed 30 to 60 m/min. (Ans. 7; Kadija col. 5, ll. 24–35.) Consequently, a person of ordinary skill in the art would have found the claimed stirring rate obvious from the cited prior art.

For the reasons expressed by the Examiner and those presented above, we determine that Appellant has not shown error in the rejection of independent claim 1. As the Examiner relies upon the same reasoning in rejecting dependent claims 3, 5, and 6 (Ans. 3–8), we similarly determine that Appellant has not shown error in the rejection of these claims.

Claims 1, 3, and 6, are rejected under 35 U.S.C. § 103(a) as unpatentable over Crosby, Sakurai, Kawaguchi, and Kadija.³

First, Appellant argues that the Examiner has not followed proper procedure because the finality of this rejection is improper. (Br. 15–16.)

³ Appellant argues claims 1, 3, and 6 together. *See generally* Appeal Brief. Therefore, we select claim 1 as representative, and claims 3 and 6 will stand or fall with claim 1. 37 C.F.R. § 41.37(c)(1)(iv) (2015).

If an Examiner has procedurally erred, the remedy lies exclusively in petitioning the Director for supervisory review. 37 C.F.R. § 1.181; *cf.* 35 U.S.C. § 6(b) (giving substantive review powers directly to the Board). The Director of the United States Patent and Trademark Office, not the Board, supervises examination and Examiners. 35 U.S.C. §§ 3(a)(2)(A), 132(a).

Appellant argues Crosby is different from the present claimed invention in that Crosby includes a carboxyalkylated polyalkyleneimine compound as an essential component. Appellant argues Crosby describes zinc as one of many other alloying metals, but the Examples describe a tin-copper alloy (*see*, e.g., Example 1 of Crosby) and a pure tin plating bath (*see* Example 2 of Crosby). (Br. 16–17.)

Appellant’s arguments are not persuasive of reversible error. The transitional term “comprising” is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. *See*, e.g., *Mars, Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1376 (Fed. Cir. 2004). The claim language does not exclude the presence of a carboxyalkylated polyalkyleneimine. Appellant has failed to explain why carboxyalkylated polyalkyleneimine is excluded from the claimed invention.

As stated above when discussing JP ’991, prior art references are available for all that they teach a person of ordinary skill in the art and are not limited to their exemplified embodiments. Crosby discloses zinc can be used along with other metals in the electroplating bath. (Crosby ¶ 30.)

Appellant argues Crosby and does not disclose or suggest the plating bath stirring rate of 30 to 60 m/min of the claimed method and Kawaguchi

does not teach or suggest stirring at a plating bath stirring rate of 30 to 60 m/min wherein said stirring is carried out by a plating apparatus of a jet flow system in which the bath solution is circulated with a pump, or by a plating apparatus for steel sheets at cathode current density of 40 to 80 A/dm², as required by the method of claim 1. (Br. 17.)

Appellant's arguments are not persuasive of reversible error. Appellant has not disputed the Examiner's determination that Kawaguchi teaches providing a jet pump for jetting the plating liquid reserved in the reservoir to the plating tank. (Ans. 15.) Similar to the rejection above, the Examiner relied on Kadija as teaching a method for electroplating a tin containing coating on a substrate material utilizing flow rates in the range of about 2 cm/sec to about 100 cm/sec. (1.2 m/min to 60 m/min), amounts that encompass the claimed 30 to 60 m/min. (Ans. 7, 15; Kadija col. 5, ll. 24–35.)

Appellant argues Sakurai and Kadija do not disclose or suggest a method as recited in claim 1 and do not overcome the deficiencies of Crosby and Kawaguchi, and the proposed combination of Crosby, Sakurai, Kawaguchi, and Kadija is improper due to their disparate disclosures. (Br. 18.)

Appellant's argument is not persuasive. Appellant has failed to provide technical reasoning explaining error in the Examiner's findings and reasons for citing the references. Appellant's arguments do not address the specific reasons identified by the Examiner for combining the teachings of the cited references. (Ans. 9–17.)

For reasons presented by the Examiner and those expressed above, Appellant's arguments are unpersuasive of reversible error in the Examiner's

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rejection of claims 1, 3, and 6 under 35 U.S.C. § 103(a), and we accordingly sustain this rejection.

Claim 5 rejected under 35 U.S.C. § 103(a) as unpatentable over Crosby, Sakurai, Kawaguchi, Kadija, and Jordan.

Appellant relies on the same arguments previously presented when addressing the Crosby, Sakurai, Kawaguchi, and Kadija references. Appellant additionally notes, and does not dispute, the Examiner cited Jordan for describing suitable surfactants for electroplating tin-zinc alloys. (Ans. 17–18; Br. 22.)

For the reasons expressed by the Examiner and those presented above, we determine that Appellant has not shown error in the combination of Crosby, Sakurai, Kawaguchi, and Kadija. As the Examiner relies upon the same reasoning for combining these references in rejecting dependent claim 5, we similarly determine that Appellant has not shown error in the rejection of claim 5.

DECISION

For the reasons set forth above and in the Answer, the decision of the Examiner is affirmed.

For the foregoing reasons and those the Examiner presents, we sustain the appealed rejections.

CONCLUSION

In summary:

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
1, 3, 5, 6	103(a)	JP '991, Sakurai, Velasquez, Kadija	1, 3, 5, 6	
1, 3, 6, 7	103(a)	Crosby, Sakurai, Kawaguchi, Kadija	1, 3, 6,	
5	103(a)	Crosby, Sakurai, Kawaguchi, Kadija Jordan	5	
Overall Outcome			1, 3, 5, 6	

TIME PERIOD

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