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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte HISAO SHISHIDO, KATSUSHI MATSUMOTO, and
YASUHIRO ARUGA

Appeal 2018-002019
Application 14/762,737
Technology Center 1700

Before MARK NAGUMO, GEORGE C. BEST, and JEFFREY R. SNAY,
Administrative Patent Judges.

SNAY, *Administrative Patent Judge.*

DECISION ON APPEAL¹

Appellant² appeals under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1–10. We have jurisdiction under 35 U.S.C. § 6(b). We reverse.

¹ We refer to the Specification (“Spec.”) filed July 22, 2015; Final Office Action (“Final Act.”) dated May 2, 2017; Appellant’s Appeal Brief (“Appeal Br.”) filed September 6, 2017; Examiner’s Answer (“Ans.”) dated November 21, 2017; and Appellant’s Reply Brief (“Reply Br.”) dated December 19, 2017.

² Appellant is Applicant, Kabushiki Kaisha Kobe Seiko Sho (Kobe Steel, Ltd.), which the Appeal Brief identifies as the real party in interest. Appeal Br. 2.

BACKGROUND

The subject matter of the application on appeal relates to an Al-Mg-Si alloy sheet. Spec. ¶ 1. According to the Specification, controlling the percentage of certain Mg-Si atom clusters relative to the total number of Mg and Si atoms can enhance bake hardening of the alloy. *Id.* ¶¶ 14, 15.

Refining the alloy through a two-stage reheating process, after solution heat treatment and quenching, affects Mg-Si cluster formation. *See id.* ¶¶ 44, 87.

Claim 1—the sole independent claim on appeal—reads as follows:

1. An Al-Mg-Si alloy sheet, comprising:
Mg in an amount of 0.2 mass% to 2.0 mass%,
Si in an amount of 0.3 mass% to 2.0 mass% and
Al,
wherein
a ratio of N_{cluster} to N_{total} is 10% or more and 30% or less,
where
 N_{total} is a sum of a number of all Mg atoms and Si atoms
measured by a three-dimensional atom probe field ion
microscope, and
 N_{cluster} is a sum of a number of all Mg atoms and Si atoms
comprised in all aggregates of atoms that satisfy the following
conditions: (i) the aggregate of atoms measured by the three-
dimensional atom probe field ion microscope comprises either
the Mg atoms or the Si atoms or both the Mg atoms and the Si
atoms by 10 or more atoms in total; and, (ii) when any atom of
the Mg atoms or the Si atoms comprised in the aggregate of
atoms is determined to be a reference atom, a distance between
the reference atom and any one of other adjacent atoms is 0.75
nm or less.

App. Br. 15 (Claims Appendix).

REJECTIONS

- I. Claims 1–10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Asano.³
- II. Claims 1–10 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Asano in view of Matsumoto.⁴

OPINION

Rejection I

Relevant to Appellant’s arguments on appeal, the Examiner finds Asano discloses an Al-Mg-Si alloy sheet that is made by a process which is “substantially similar” to the production process described in the Specification. Final Act. 2. Premised on that finding, the Examiner determines that an alloy sheet made in accordance with Asano inherently would have exhibited the recited Mg-Si clusters within the recited percentage range. *Id.* at 3.

Appellant argues, *inter alia*, that the Examiner has not provided an evidentiary basis to support the above-mentioned inherency determination. Appeal Br. 5. Appellant points to comparative examples described in the Specification which reportedly were prepared using two-stage reheating conditions disclosed in Asano and which did not possess the cluster property recited in claim 1. *Id.* at 10.

There appears to be no dispute that Asano teaches first-stage reheating at 150 °C or lower for up to 10 minutes, followed by second-stage reheating

³ JP2012-41567 A, published March 1, 2012, as translated.

⁴ WO 2012/124676 A1, published September 20, 2012. The Examiner relies on US 2014/0003993 A1, published January 2, 2014, as an English-language equivalent of Matsumoto. Final Act. 3.

at 50–140 °C for 1 minute to 10 hours. *Compare* Final Act. 2, with Appeal Br. 10 (referring to “Asano’s range of less than 150°C” and “Asano’s range of 50 to 140°C”) (emphasis omitted). Those temperature ranges overlap first and second reheating conditions described in the Specification. *See* Spec. ¶ 86 (describing first-stage reheating at 100–250 °C for several seconds to several minutes, followed by second-stage reheating at 70–130 °C for 3–24 hours).

Appellant points to Comparative Examples 3, 9, and 15 described in the Specification as evidence that Asano’s disclosed process does not necessarily yield the recited cluster property. Appeal Br. 10. Each of Comparative Examples 3, 9, and 15 reportedly was produced with first-stage reheating at 80 °C and second-stage reheating at 100 °C. *See* Spec. Table 2. Those reheating temperatures are within the ranges taught by Asano. However, the Specification reports that none of Comparative Examples 3, 9, and 15 exhibited 10–30% recited Mg-Si clusters required by claim 1. *See* Spec. Table 3 (9.3%, 8.8%, and 8.9%, respectively). The Specification additionally identifies Comparative Examples 27, 28, and 30, which also did not exhibit the recited 10–30% clusters, even though each was produced using first- and second-stage reheating temperatures (200 and 100 °C, respectively) that fall within the within the ranges described in the Specification and relied upon by the Examiner. *See* Spec. Tables 2, 3.

The foregoing Comparative Example data undermines the Examiner’s presumption that the alloy sheet production process of Asano necessarily would have yielded the recited Mg-Si clusters. A burden may shift to the applicant to prove that a prior art product does not necessarily possess a disputed characteristic only after the Examiner provides a reasonable basis

to believe that the characteristic is inherent. *See In re Best*, 562 F.2d 1252, 1254–1255 (CCPA 1977) (discussing *In re Swinehart*, 439 F.2d 210 (CCPA 1971) and *In re Ludtke*, 441 F.2d 660 (CCPA 1971)). Because Appellant identifies reversible error in the Examiner’s failure to provide a reasonable basis to believe the recited property would have been inherent in the prior art, Rejection I is not sustained.⁵

Rejection II

Rejection II is premised on the same unsubstantiated determination that Asano’s process inherently would have yielded the recited Mg-Si clusters because Asano discloses overlapping two-stage reheating ranges. *See* Final Act. 4; Ans. 5.

Accordingly, Rejection II also is not sustained for the reasons set forth above.

DECISION

The Examiner’s decision rejecting claims 1–10 is reversed.

REVERSED

⁵ The Examiner reasons in the Answer that it would have been obvious to select any of Asano’s disclosed reheating temperatures, and that the recited cluster property would have resulted if one were to select temperatures from the portions of Asano’s ranges that overlap the ranges described in the Specification. Ans. 5. However, the Examiner presents no rational underpinning, e.g., evidence or an explanation based on first principles, to show that one of ordinary skill would have had a reason to select certain reheating temperatures from Asano’s ranges. Moreover, as noted, Appellant’s Comparative Examples 27, 28, and 30 present evidence that selection of reheating temperatures within the ranges described in the Specification would not necessarily yield the recited cluster property.