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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte DWAINE L. KLARSTROM, STEVEN J. MATTHEWS, and VENKAT R. ISHWAR

Appeal 2011-012223
Application 12/001,528
Technology Center 1700

Before BRADLEY R. GARRIS, RICHARD E. SCHAFER, and JAMES C. HOUSEL, *Administrative Patent Judges*.

HOUSEL, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision finally rejecting claims 1 and 3-8. The rejections of claim 2 have been withdrawn. We have jurisdiction over the appeal under 35 U.S.C. § 6(b).[1]

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[1] An oral hearing was conducted before this panel on January 8, 2013.

We AFFIRM.[2]

CLAIMED SUBJECT MATTER

The invention is directed to a weldable, oxidation resistant alloy of nickel, iron, chromium and aluminum. By providing large additions of iron in the 25-32% range and reductions in the aluminum plus titanium levels to the 3.4-4.2% range, the alloy is asserted to improve resistance to strain-age cracking providing better weld fabricability. Further, increasing the chromium level to about 18-25% is done to ensure adequate oxidation resistance at the reduced aluminum level. Spec. 3, ll. 8-20.

Claims 1 and 8, representative of the claims on appeal, are reproduced below:

1. A weldable, high temperature, oxidation resistant alloy consisting essentially of, by weight percent, 25% to 32% iron, 18 to 25% chromium, 3.0 to 4.5% aluminum, 0.2 to 0.6% titanium, 0.2 to 0.4% silicon, 0.2 to 0.5% manganese, up to 2.0-% cobalt, up to 0.5% molybdenum, up to 0.5% tungsten, up to 0.01 % magnesium, up to 0.25% carbon, up to 0.025% zirconium, up to 0.01 % yttrium, up to 0.01 % cerium, up to 0.01 % lanthanum, and the balance nickel plus impurities, Al+ Ti content is from 3.4% to 4.2% and chromium and aluminum are present in amounts so that a Cr/Al ratio is from 4.5 to 8.
8. A weldable, high temperature oxidation resistant alloy comprising in weight percent 27.5% iron, 20% chromium. 3.75% aluminum, 0.25% titanium, 0.05% carbon, 0.3% silicon, 0.25% manganese and the balance nickel plus impurities.

App. Br., Claims App'x.

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[2] Our decision refers to Appellants' Brief (App. Br.) filed April 28, 2011, the Examiner's Answer (Ans.) mailed May 26, 2011, and Appellants' Reply Brief (Reply Br.) filed July 26, 2011.

REJECTIONS

The Examiner maintains the following grounds of rejection under 35 U.S.C. §103(a):

1. Claims 1 and 3-7 under 35 U.S.C. § 103(a) as being unpatentable over Chikazaki[3]. Ans. 4-8.

2. Claims 1 and 3-8 under 35 U.S.C. § 103(a) as being unpatentable over Petersen[4]. Ans. 8-11.

3. Claims 1 and 3-8 under 35 U.S.C. § 103(a) as being unpatentable over Kihira[5]. Ans. 6-7.

ISSUES

Appellants' arguments raise the following issue:

Did the Examiner err in concluding that the claimed invention would have been obvious under 35 U.S.C. § 103(a) over any one of Chikazaki, Petersen, and Kihira, specifically that these references teach one skilled in the art to make an alloy having the desired properties of weldability and oxidation resistance, where each reference teaches an alloy whose amounts of nickel, iron, chromium, and aluminum, as well as all other elements overlap the amounts recited in the claims?

We answer this question in the negative and affirm the Examiner's decision to reject claims 1 and 3-8 for the reasons expressed in the Answer. *See generally*, Ans. 4-25. We note the Examiner has fully addressed Appellants' separate arguments in support of patentability of the above-

[3] JP 11-012669, published Jan. 19, 1999 (machine translation).
[4] US 4,010,309, issued Mar. 1, 1977.
[5] JP 10-053841, published Feb. 24, 1998 (machine translation).

noted claims. We add the following discussion of the above-listed issue for completeness.

ANALYSIS

Appellants do not present separate arguments in support of patentability of the claims.[6] *See* App. Br. 5-11; Reply Br. 1-3. Accordingly, we decide patentability of all claims on the basis of claim 1. 37 C.F.R. § 41.37(c)(1)(vii).

Appellants acknowledge agreement with the Examiner on the finding of fact that each of the above applied references discloses ranges of elements in alloy compositions that overlap the ranges in claims 1 and 3-8. Reply Br. 1. Accordingly, it would appear that Appellants concede that the Examiner has established a prima facie case of obviousness. However, Appellants contend that the Examiner has improperly treated test data in the Specification as well as test data for the TECH BRIEF and the ICONEL® 601 alloy set forth in the Evidence Appendix of Appellants' Brief.[7] *Id.* Appellants contend that this test data shows the criticality of the claimed ranges, as well as of the Cr/Al ratio and amount of aluminum and titanium. *Id.*

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[6] We note Appellants discuss claim 8 with regard to the § 103 rejection over Petersen. App. Br. 10. However, Appellants' conclusory statement that there is nothing in Petersen which would lead one skilled in the art to the composition of claim 8 lacks any supporting argument or justification. Merely reciting what is taught in Petersen is insufficient to support any cognizable argument in support of this conclusory statement.

[7] Appellants mention but do not further discuss either the TECH BRIEF or the ICONEL® 601 alloy in their Briefs. Accordingly, we will not consider this evidence further.

Appellants may overcome a prima facie case of obviousness by establishing that the claimed ranges are critical, or generally by showing that the claimed ranges achieve unexpected results relative to the prior art range. *In re Geisler*, 116 F.3d 1465, 1469-70 (Fed. Cir. 1997). In this regard, Appellants direct our attention to Specification heats N and O, as well as Figures 2 and 3 as objective evidence of unexpected results. In particular, Appellants indicate that Specification heats N and O show that reducing the Al content from 4.27% to 3.87%, while increasing the Cr level from 18 to 20.2% improves the 1400°F tensile ductility, while maintaining the 1800°F oxidation resistance "at the desired level." App. Br. 9. In reference to heat R, Appellants note that when the Al level was reduced to 2% and the Cr level was increased to 26%, "good 1400°F tensile ductility was obtained, but the oxidation resistance was poor." *Id.* Moreover, Appellants argue that Figures 2 and 3 "indicate that good ductility is obtained when the ratio is greater than about 4.5, and good 1800°F oxidation resistance was obtained when the Cr/AI ratio was between 4 and 8." *Id.*

We have considered this test data in the totality of the record before us and conclude that Appellants have not carried forward their burden of establishing that the Examiner erred in concluding that the claimed invention would have been obvious over the applied prior art. In order for a showing of unexpected results to be probative evidence of non-obviousness, it falls upon Appellants to at least establish: (1) that there actually is a difference between the results obtained through the claimed invention and those of the prior art, *In re Klosak*, 455 F.2d 1077, 1080 (CCPA 1972) (noting that the burden of analyzing and explaining data to support nonobviousness rests with the appellants); and (2) that the difference actually obtained would not

have been expected by one skilled in the art at the time of invention, *Id.*; *In re D'Ancicco*, 439 F.2d 1244 (CCPA 1971). *See In re Freeman*, 474 F.2d 1319, 1324 (CCPA 1973). The Examiner found, and we agree, that this evidence is not commensurate with, and does not evince of a clear trend of unexpected results for, the full the scope of the claims (Ans. 24-25). The Examiner noted that the level of Al in claim 1 is from 3.0 to 4.5%[8], yet Appellants argue that when Al is at or above 4.0%, the 1400°F ductility is poor. Ans. 24. Concerning criticality, Appellants argue that "the Examiner has failed to appreciate that the claimed composition has a combination of both 1400°F tensile elongation and 1800°F oxidation resistance."[9] Reply Br. 2. We note, however, that none of the claims recite any specific requirement for a particular value for either or both of these properties. The claims merely recite "[a] weldable, high temperature, oxidation resistant alloy" without identifying any specific desired properties to be obtained. *See* claims 1 and 3-8. In addition, the Specification provides three different metrics provided for each of the tensile and oxidation tests, as well as a metric on hot cracking, providing somewhat variable information for each alloy tested. Spec. 5-13. Appellants fail to direct our attention to anywhere in the Specification, nor do we find any, defining the critical parameters for defining unexpected results.

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[8] We note that while claim 1 initially recites the Al level is from 3.0 to 4.5%, this claim subsequently requires that the level of Al+Ti is from 3.4 to 4.2%, thus effectively narrowing the actual amount of Al present in the alloy from 3.0 to 4.2%.

[9] Appellants only confound the issue when they add that the alloy having an Al+Ti of 3.1% has good 1400°F tensile ductility (elongation), but unacceptable 1400°F yield strength at less than 50 ksi. Reply Br. 2.

The Examiner found that since each of the applied references discloses a substantially similar composition, one of ordinary skill in the art would expect the alloy to be weldable, and high temperature oxidation resistant. Ans. 6, 10, and 12. Moreover, the Examiner indicated that there are alloys outside the range of Al+Ti from 3.4 – 4.2% and the ratio range of Cr/Al from 4.5 to 8 that have as good or better 1400°F tensile elongation as alloys inside these ranges. *Id.* The Examiner noted that Appellants identify in Table XVII the alloys that have "the desired properties" as Modified Heat E, and Heats K, O, P, S and T. We credit the Examiner's finding that Heat O is not within the scope of claim 1 as the Al+Ti amount is 4.22, above the claimed range of 3.4 – 4.2%[10]. Modified Heat E and Heat P have either no or insufficient Mn and also fall outside the scope of the scope of claim1. Heat K, though shown to have an Al+Ti amount as 3.83 actually has an Al+Ti amount of 4.3 (3.87+0.43). Thus, only Heats S and T correspond to the alloy composition claimed and neither is charted in Figures 2 or 3. Appellants fail to direct us to any test data demonstrating that Heats S and T, let alone test data commensurate with the scope of the claims, yield unexpected results. We also note that Appellants disclose that Alloy G fails to have "all the desired properties," yet this alloy falls within the scope of claim 1. Spec. 6-7. Accordingly, Appellants have failed to demonstrate a difference in results for an alloy failing within and outside the scope of the

[10] Appellants failed to contest this finding in their Reply Brief, but instead argued at oral hearing that 4.22 falls within the claimed range due to the lack of the significant digits in the range. Oral Hearing Transcript 3, ll. 1-4. Notwithstanding the untimely challenge to the Examiner's finding, Appellants fail to direct our attention to any controlling case law on this point.

claims. As such, based on the totality of the record before us, we do not find reversible error in the Examiner's conclusion of obviousness over each of the applied references.

CONCLUSION

In sum, for the reasons expressed in the Answer and above, we find a preponderance of the evidence favors the Examiner's conclusion of obviousness as to appealed claims 1 and 3-8. We sustain all grounds of rejection maintained by the Examiner.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

DECISION

The decision of the Examiner is AFFIRMED.

AFFIRMED

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