

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 17

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte SAM FRIEDMAN, SHERWOOD GOLDSTEIN, and YOSHIO ITO

Appeal No. 1996-3770
Application No. 08/412,834¹

ON BRIEF

Before KIMLIN, PAK, and KRATZ, *Administrative Patent Judges*.

KRATZ, *Administrative Patent Judge*.

DECISION ON APPEAL

¹ Application for patent filed March 29, 1995. According to appellants, this application is a continuation of Application No. 08/193,830, filed February 9, 1994, now abandoned; which is a continuation-in-part of Application No. 08/112,500, filed August 26, 1993, now abandoned.

This is a decision on appeal from the examiner's refusal to allow claims 1 through 9, which are all of the claims pending in this application.

BACKGROUND

The appellant's invention relates to a process for treating a copper-beryllium alloy to obtain substantially uniform formability in both parallel and perpendicular rolling directions. An understanding of the invention can be derived from a reading of exemplary claim 1, which is reproduced below.

1. A treatment process for providing substantially uniform formability in both a perpendicular and a parallel rolling direction of a strip of a copper-beryllium alloy consisting essentially of from 0.38% to about 0.6% beryllium, from about 1.4% to about 2.2% nickel, from about 0% to about 2.1% cobalt, no greater than about 0.5% selected from the group consisting of titanium and zirconium and mixtures thereof, and at least about 90% copper, wherein the alloy has been cold worked to a ready-to-finish gauge, comprising the steps of:

(a) annealing the cold worked ready-to-finish gauge copper-beryllium alloy strip at a temperature from about 1500°F to 1600°F;

(b) further cold working the annealed copper-beryllium alloy strip to reduce its gauge by an amount in a range from about 20% to about 60%; and

(c) age hardening the further cold-worked copper-beryllium alloy strip at a temperature of from about 700°F to 950°F for about 1 to about 7 hours to produce substantially uniform formability in both the parallel and perpendicular rolling

directions in the copper-beryllium alloy strip, wherein the 180° R/T bend ratio of the age-hardened copper-beryllium alloy strip in both the parallel and perpendicular rolling directions is no greater than about 1.4.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

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| Sawyer et al. (Sawyer) 1942 | 2,289,593 | Jul. 14, |
| Wikle 1979 | 4,179,314 | Dec. 18, |
| Ikushima et al. (Ikushima) 1987 | 4,692,192 | Sep. 08, |

Minoura et al. (Minoura), Japan Kokai published patent application No. 56-163248, December 15, 1981²

Claims 1, 2, 5, 6, 8, and 9³ stand rejected under 35 U.S.C. § 103 as being unpatentable over Ikushima or Sawyer. Claims 1, 2, 5, 6, 8, and 9 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ikushima or Sawyer in view of Minoura.

Claims 3, 4, and 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Ikushima or Sawyer in view of Minoura

² All subsequent references in this opinion to Minoura is a reference to the English language translation of the Japanese laid-open application of record. The examiner in the answer and appellants in the brief also appear to rely on that English translation of the Japanese laid-open application.

³ The reference to claim 10 at pages 3 and 4 of the answer is an apparent oversight as evidenced by the examiner's acknowledgment of the cancellation of claim 10 (answer, pages 1 and 2). The examiner approved entry of the amendment filed October 25, 1995 in an advisory action mailed November 09, 1995. We note that the October 25, 1995 amendment has not as yet been physically entered.

as applied to claims 1, 2, 5, 6, 8, and 9 above, and further in view of Wikle.

OPINION

Having carefully considered all of the arguments and evidence advanced by appellants and the examiner, we find ourselves in agreement with appellants that the examiner has failed to establish the obviousness of the claimed subject matter within the meaning of 35 U.S.C. § 103. Accordingly, we will not sustain the examiner's rejections.

The appealed claims are directed to a process that includes the steps of furnishing a strip of a copper alloy of a specified composition including from 0.38% to about 0.6% beryllium and about 1.4% to about 2.2% nickel that has been cold worked to a ready-to-finish gauge and thereafter treating the strip by the ordered steps of: (1) annealing at about 1500-1600°F, (2) cold working to reduce the gauge by about 20-60%, and (3) age hardening the strip at about 700-900°F for about 1-7 hours. The appealed claims are further limited such that the combined treatment steps and conditions are required to produce

a treated alloy strip having substantially uniform formability including a 180° R/T bend ratio of no greater than about 1.4 in both the parallel and perpendicular rolling directions.

According to appellants, the R/T bend test measures formability (specification, pages 12-14) with the 180° bend test being more severe than a 90° bend test and resulting in comparatively lower numeric values when testing a sample with the 180° test (brief, pages 3 and 4, and Ikushima declaration, item 10). The examiner has not specifically contested appellants' description of the bend tests.

The examiner acknowledges that each of the principal references utilized in all of the stated rejections (Sawyer and Ikushima) teach the use of an annealing temperature that is higher than the claimed temperature range of about 1500-1600°F (answer, page 4). According to the examiner, it would have been obvious to use a lower annealing temperature as claimed in either of Ikushima or Sawyer since "... the claimed ranges and prior art do not overlap but are close enough that one skilled in the art would have expected them to have the same properties..." (answer, page 4). In our view, however, the case law cited by the examiner in support of this proposition,

Titanium Metals Corp. v. Banner, 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985) does not establish a universal rule regarding the obviousness of "close enough ranges" especially where, as here, the claims require that a combination of specific steps for treating a particular alloy composition are conducted in a manner to result in a product alloy having formability properties not disclosed in the applied prior art. As stated by the Federal Circuit in *In re Ochiai*, 71 F.3d 1565, 1572, 37 USPQ2d 1127, 1133 (Fed. Cir. 1995), "reliance on *per se* rules of obviousness is legally incorrect and must cease."

While the Ikushima patent discloses some overlapping conditions for cold working and aging an alloy, both the alloy composition suggested by patentee and the annealing temperature differ from that claimed. Ikushima is concerned with using lower beryllium content alloys in forming a material with high electroconductivity and spring performance. Ikushima also discusses the relative formability properties of the alloy (column 7, lines 15-33). In this regard, we are mindful that Ikushima discloses that a prior art alloy with a composition within the range called for by the appealed claims is known and may be annealed at a higher temperature, cold worked, and aged

to obtain a product with a bending formability (R/T) of 2 in a parallel and perpendicular direction (Comparative Example 3, columns 3 and 4) and that a bending formability of (R/T) as low as 1 may be obtained in at least one direction when employing a composition with a lower beryllium content that is annealed at 900°C (1652°F) (Example 5 and claim 1). However, the examiner has not furnished any convincing reasons explaining how Ikushima would have taught or suggested to one skilled in the art to use a higher beryllium content copper alloy as claimed herein together with lower temperatures for annealing and cold working and aging in the range claimed to obtain an alloy with the specific formability properties called for by the subject process.

With regard to the applied Sawyer reference, we note that this patent's teachings are even further removed from the claimed process. In this regard, the examiner has not furnished a convincing explanation of why a skilled artisan would have been led to pick a particular alloy composition within the broader range of compositions disclosed in the patent and use a lower annealing temperature than otherwise suggested in the patent along with cold working and aging

conditions as claimed herein to form an alloy having the claimed formability properties. In this regard, we note that Sawyer is concerned with the electrical conductivity properties of the alloy as well as a variety of mechanical properties such as strength and hardness (column 1, lines 42+). Sawyer does not disclose the specific formability properties of the alloy as called for in the appealed claims.

The examiner additionally relies on Minoura in combination with either Sawyer or Ikushima in a separately stated rejection and further combined with Wikle with regard to several dependent claims. However, these references' teachings do not cure all of the above-noted deficiencies. Neither Minoura or Wikle suggest making an alloy with the formability properties required by the claims. In this regard, the examiner has not adequately explained how the teachings of Minoura regarding the treatment of alloys of copper and beryllium to obtain excellent mechanical strength and electrical conductivity properties would have suggested a modification of either the Sawyer or Ikushima process to arrive at the claimed invention. It is not clear to us why a skilled artisan would selectively pick a

particular alloy within the herein claimed composition range and a lower annealing temperature from the broad range of temperature disclosed by Minoura without also utilizing the teachings of Minoura regarding other process features disclosed in the patent, such as the 5-15 minute aging steps, that differ from those claimed herein and disclosed by Sawyer and Ikushima.

Regarding the Wikle patent, the examiner has relied on this reference for alleged teachings related to a tension leveling step claimed by appellants in several dependent claims and has not furnished any explanation as to how this reference would have cured the above-noted deficiencies of the primary references.

We do not share the examiner's views regarding the inherency of obtaining the claimed formability properties in practicing the prior art teachings in making the product alloys of the applied prior art. The examiner must provide convincing evidence or scientific reasoning to establish the reasonableness of his or her belief that a required limitation of a claim such as herein claimed is an inherent characteristic of the prior art.

Inherency may not be established by probabilities or possibilities. In *re Oelrich*, 666 F.2d 578,581, 212 USPQ 323, 326 (CCPA, 1981). Here, the examiner has not shown that the claimed 180° R/T values would have necessarily resulted when following the prior art teachings of alloy treatment.

In addition, appellants have furnished evidence (Ikushima declaration) that the only reference (Ikushima patent) relied upon by the examiner that discloses R/T values for the treated alloys are reported values based on 90° R/T tests, not 180° R/T tests as claimed herein and would be unfavorably comparable to the claimed values insofar as suggesting the claimed process. The examiner's reference to claim 1 of the Ikushima patent (answer, pages 9 and 10) does not serve to invalidate this evidence furnished in the Ikushima declaration.

As a final matter, we note that appellants have submitted declaratory evidence (Goldstein and Ikushima declarations) together with the test results reported in the specification regarding the claimed formability properties. Expert opinion (Goldstein and Ikushima declarations) indicates that the claimed formability properties would have been unexpected to a skilled artisan. The examiner's comments at page 10 of the

answer do not reflect that appropriate weight has been accorded this evidence of unobviousness.

On this record, it is our view that the declaratory evidence taken with appellants' specification establish that the claimed formability properties would have been unexpected from the prior art teachings relied upon by the examiner. See *In re Soni*, 54 F.3d 746, 750, 34 USPQ2d 1684, 1687 (Fed. Cir 1995).

In view of the above, the examiner's stated rejections can not be sustained.

CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 2, 5, 6, 8, and 9 under 35 U.S.C. § 103 as being unpatentable over Ikushima or Sawyer; claims 1, 2, 5, 6, 8, and 9 under 35 U.S.C. § 103 as being unpatentable over Ikushima or Sawyer in view

of Minoura; and claims 3, 4, and 7 under 35 U.S.C. § 103 as being unpatentable over Ikushima or Sawyer view of Minoura and further in view of Wikle is reversed.

REVERSED

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| EDWARD C. KIMLIN |) | |
| Administrative Patent Judge |) | |
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| |) | BOARD OF PATENT |
| Chung K. Pak |) | APPEALS |
| Administrative Patent Judge |) | AND |
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| PETER F. KRATZ |) | |
| Administrative Patent Judge |) | |

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