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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte QINGJUN ZHENG, PIYAMANEE KOMOLWIT, YIXIONG LIU,
JIM FAUST, JONATHAN BITLER, and SRINIVASAO BODDAPATI

Appeal 2019-005658
Application 14/330,547
Technology Center 1700

Before LINDA M. GAUDETTE, KAREN M. HASTINGS, and
BRIAN D. RANGE, *Administrative Patent Judges*.

HASTINGS, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant¹ requests our review under 35 U.S.C. § 134(a) of the
Examiner’s decision finally rejecting claims 1–13, 21–25, and 30–32.

We have jurisdiction over the appeal under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42(a). “Kennametal Inc.” is identified as the real party in interest (Appeal Br. 3).

CLAIMED SUBJECT MATTER

Claim 1 is illustrative of the subject matter on appeal:

1. A composite article comprising:
 - a substrate; and
 - a coating adhered to the substrate, the coating comprising an inner layer and an outer layer, the inner layer being fully dense and comprising sintered powder metal or powder alloy, and the outer layer comprising hard particles disposed in matrix metal or matrix alloy, wherein the matrix metal or matrix alloy does not infiltrate the inner layer.

(Appeal Br. 13 (Claims App.)).

The following rejections under 35 U.S.C. § 103(a) are on appeal:

- a- Claims 1–4, 6, 7, 10–13, 21–25 as unpatentable over the combined prior art of McCracken (US 2008/0286598 A1, published November, 20, 2008) and Nicholls (US 5,593,726 issued January 14, 1997);
- b- Claims 1, 3, 7, 12, 13, 21–25 as unpatentable over Nicholls;
- c- Claims 2, 4, 10, 11 as unpatentable over Nicholls and McCracken;
- d- Claim 30 as unpatentable over the combined prior art of McCracken, Nicholls, and Deveaux (US 2012/0037280 A1, published February 16, 2012), and over Nicholls and Deveaux;
- e- Claim 5 as unpatentable over the combined prior art of McCracken, Nicholls, and Sagues (“Slurry Abrasion/Erosion Behavior of Metal-Ceramic Coatings,” *Mechanical Properties, Performance, and Failure Modes of Coatings*, 1984, Cambridge University Press: Ed. Shives et al.; p. 165-166);
- f- Claim 6 as unpatentable over the combined prior art of McCracken, Nicholls, and Majagi (US 2004/0234820 A1, published November, 25, 2004), and over Nichols and Majagi;

- g- Claim 8 as unpatentable over the combined prior art of McKracken, Nicholls, and Baldoni (US 5,310,605 issued May 10, 1994), and over Nicholls and Baldoni;
- h- Claim 9 as unpatentable over the combined prior art of McKracken, Nicholls, and Solanki (US 5,352,526 issued October 4, 1994), and over Nicholls, McKracken, and Solanki;
- i- Claim 31 as unpatentable over the combined prior art of Sato (JP 05-239696 A) and Alexander (US 4,818,628 issued April 4, 1989); and
- j- Claim 32 as unpatentable over the combined prior art of Sato, Alexander, and Tsujimoto (JP 2008-144253 A).

Claims 1–13 and 21–25 are also rejected on the ground of nonstatutory double patenting over claims of US Patent 8,808,870 (Final Act. 3). Appellant does not contest this rejection, stating that it “will submit the appropriate terminal disclaimer” (Appeal Br. 5). Thus, this rejection is summarily affirmed.

OPINION

Upon consideration of the evidence relied upon in this appeal and each of Appellant’s contentions as set forth in the Appeal Brief and the Reply Brief, we determine that Appellant has not identified reversible error in the Examiner’s rejection (*See generally* Ans.). *In re Jung*, 637 F.3d 1356, 1365–66 (Fed. Cir. 2011) (explaining the Board’s long-held practice of requiring Appellant(s) to identify the alleged error in the Examiner’s rejection). We sustain the rejection for the reasons expressed by the Examiner in the Final Office Action and the Answer.

We add the following primarily for emphasis.

It has been established that “the [obviousness] analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007); *see also In re Fritch*, 972 F.2d 1260, 1264–65 (Fed. Cir. 1992) (a reference stands for all of the specific teachings thereof as well as the inferences one of ordinary skill in the art would have reasonably been expected to draw therefrom).

Appellant’s arguments focus on independent claim 1, except for the arguments with respect to dependent claims 31 and 32 as addressed below (*generally* Appeal Br.).

Appellant’s arguments with respect to the rejection of claim 1 based on McCracken and Nicholls are focused on their belief that McCracken is limited to thermal spray coatings that “cannot produce the claimed inner layer comprising sintered powdered metal” or alloy (Appeal Br. 5) and that “it is not credible for the skilled artisan to replace [its] coating” with one produced by the sintered powder method of Nicholls (Appeal Br. 6) since such a method would not achieve the desired different orientations of the layers of McCracken (Appeal Br. 7). Appellant’s arguments with respect to the rejection of claim 1 based on Nicholls as the sole primary reference are that Nicholls does not use a “multilayer format” (Appeal Br. 8) and that its dry sintering process would not produce the same microstructure as Appellant’s liquid phase sintering (Appeal Br. 8).

Appellant’s arguments are not persuasive of reversible error as they fail to consider the applied prior art as a whole and the inferences that one of ordinary skill would have made.

First, Appellant has not shown reversible error in the Examiner's determination that Nicholls alone renders claim 1 obvious (e.g., Ans. 10–12). Contrary to Appellant's argument that Nicholls does not describe a multilayer coating, Nicholls specifically describes "that a plurality of layers of different coating materials may be applied without difficulty" (Nicholls col. 3, ll. 8–12; Ans. 25). Appellant's argument that wet sintering is used to make the composite article of claim 1 versus the dry sintering process of Nicholls is also not persuasive (Appeal Br. 8). Claim 1 does not recite how the composite article was made, nor does Appellant show that Nicholls' process for applying multiple sintered powder metal layers as a hard, wear, and corrosion resistant coating would not have resulted in the two layer coating structure recited in claim 1 (Ans. 26).² *In re Self*, 671 F.2d 1344, 1348 (CCPA 1982) (limitations not appearing in the claim may not be relied upon for patentability).

With respect to the rejection of claim 1 based on McCracken and Nicholls, as the Examiner aptly points out, one of ordinary skill in the art would have readily inferred from the overall teachings of the applied prior art that Nicholls' sintered powder method for applying coatings would have been a predictable, known way to make the metal matrix layers of McCracken's coating for the numerous advantages taught therein (e.g., Ans. 4, 5, 22, 23). Under the flexible inquiry set forth by the Supreme Court, the

² It has long been held that "[i]f the product in a product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *SmithKline Beecham Corp. v. Apotex Corp.*, 439 F.3d 1312, 1317 (Fed. Cir. 2006) (quoting *In re Thorpe*, 777 F.2d 695, 697 (Fed. Cir. 1985)).

PTO must take account of the “inferences and creative steps,” or even routine steps, that an ordinary artisan would employ. *Ball Aerosol & Specialty Container, Inc. v. Ltd. Brands, Inc.*, 555 F.3d 984, 993 (Fed. Cir. 2009). One of ordinary skill would have readily inferred and appreciated from the applied prior art as a whole that a known method of making multiple metal sintered powder coating layers as exemplified in Nicholls to manufacture the metal powder layers of McCracken would have been within the skill and creativity of one of ordinary skill in the art.

Likewise, Appellant’s argument that McCracken teaches away from the use of sintered powdered metal layers because it also teaches that a thermal spray method with different orientations of layers is preferred (Appeal Br. 6) is not persuasive for reasons set out by the Examiner (Ans. 22, 23). Whether the prior art teaches away from the claimed invention is a question of fact. *In re Harris*, 409 F.3d 1339, 1341 (Fed. Cir. 2005). It is well established that a prior art reference must be considered in its entirety, i.e., as a whole, when determining if it would have led one of ordinary skill in the art away from the claimed invention. *W.L. Gore & Assocs., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983). One of ordinary skill in the art would have readily appreciated that there are numerous ways to manufacture a multilayered coating such as exemplified in McCracken. *See In re Susi*, 440 F.2d 442, 446 n.3 (CCPA 1971) (Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or non-preferred embodiments.); *Syntex (U.S.A.) LLC v. Apotex, Inc.*, 407 F.3d 1371, 1379–80 (Fed. Cir. 2005) (Even a “statement that a particular combination is not a preferred embodiment does not teach away absent clear discouragement of that combination.”). One of ordinary

skill would have expected the known, powder-sintered method exemplified in Nicholls to be a useful alternative for making the multi-layered abrasion resistant coating of McCracken so as to result in the claimed fully dense inner layer of sintered powder metal and outer layer as recited in claim 1. Appellant has not sufficiently explained why the claimed subject matter is “more than the predictable use of prior art elements according to their established functions.” *KSR*, 550 U.S. at 417; *see also* Ans. 24, 25.

Accordingly, we sustain the Examiner’s rejection of independent claim 1 based on Nicholls alone or on Nicholls and McCracken, as well as all claims dependent thereon, noting that Appellant relies upon the arguments made for claim 1 for all the other claims, including those claims rejected separately, except for claims 31 and 32 (*See* Appeal Br. 9, 10).

Appellant separately argues dependent claims 31 and 32 that require that the inner layer “comprises copper-based alloy” (claim 31, Appeal Br. Claims Appendix 15). The Examiner relies upon Sato and Alexander for these claims.³ Contrary to Appellant’s argument that the Examiner has misread Sato and that its copper alloy is the substrate (Appeal Br. 11), the Examiner has pointed out that one of ordinary skill in the art would have readily inferred that a copper alloy sintered layer is indeed formed on a backing steel plate of Sato, and provided evidence in support of this position (Ans. 28, 29). Appellant has not responded or otherwise disputed the Examiner’s explanation. Accordingly, no error has been shown in the rejection of claims 31 and 32.

³ We note that claim 1 is *de facto* included in this rejection as claim 31 depends therefrom, even though the Examiner did not explicitly list claim 1 in this rejection.

DECISION SUMMARY

In summary:

| Claims Rejected | 35 U.S.C. § | Reference(s)/Basis | Affirmed | Reversed |
|-------------------------|--------------------|---|-------------------------|-----------------|
| 1-13, 21-25 | | Non-statutory double patenting; US 8,808,870 | 1-13, 21-25 | |
| 1-4, 6, 7, 10-13, 21-25 | 103(a) | McCracken, Nicholls | 1-4, 6, 7, 10-13, 21-25 | |
| 5 | 103(a) | McCracken, Nicholls, Sagues | 5 | |
| 6 | 103(a) | McCracken, Nicholls, Majagi | 6 | |
| 8 | 103(a) | McCracken, Nicholls, Baldoni | 8 | |
| 9 | 103(a) | McCracken, Nicholls, Solanki | 9 | |
| 30 | 103(a) | McCracken, Nicholls, Deveaux | 30 | |
| 1, 3, 7, 12, 13, 21-25 | 103(a) | Nicholls | 1, 3, 7, 12, 13, 21-25 | |
| 2, 4, 10, 11 | 103(a) | Nicholls, McCracken | 2, 4, 10, 11 | |
| 6 | 103(a) | Nicholls, Majagi | 6 | |
| 8 | 103(a) | Nicholls, Baldoni | 8 | |
| 9 | 103(a) | Nicholls, McCracken, Solanki | 9 | |
| 30 | 103(a) | Nicholls, Deveaux | 30 | |
| 31 | 103(a) | Sato, Alexander | 31 | |
| 32 | 103(a) | Sato, Alexander, Tsujimoto | 32 | |
| Overall Outcome | | | 1-13, 21-25, 30-32 | |

Appeal 2019-005658
Application 14/330,547

TIME PERIOD FOR RESPONSE

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