Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte VINOD K. SARIN

Appeal No. 1996-3806
Application 08/183,152

ON BRIEF

Before PAK, WARREN and OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 1-9 and 11-17, which are all of the claims remaining in the application.

THE INVENTION

Appellant's claimed invention is directed toward an abrasion resistant coated article having a wear surface which

has no cubic

carbides to a depth at least sufficient to avoid exposure of

cubic carbides to a workpiece in tribological applications.

Claim 1 is illustrative:

1. A coated article for tribological applications, said article having a wear surface and comprising:

a densified substrate substantially comprising at least one of cemented carbides, cemented nitrides, cemented carbonitrides, ceramics, and combinations thereof; and

a coating codeposited on said substrate and providing said wear surface, said coating being about 1-50 μm thick and comprising a pore-free, dense hard phase/cobalt binder composite, said hard phase comprising tungsten carbide, nitride, or carbonitride;

wherein said wear surface includes said hard phase/cobalt binder composite, but includes no cubic carbides to a depth at least sufficient to avoid exposure of cubic carbides to a workpiece during use of said article in said tribological applications, such that said coated article provides wear resistance and chemical inertness and possesses good shape retention at high machining speeds.

THE REFERENCES

Hale	4,497,874	Feb. 5, 1985
Sastri	4,556,607	Dec. 3, 1985

THE REJECTIONS

The claims stand rejected as follows: claims 1-5, 11-13 and 15-17 under 35 U.S.C. § 102(b) as being anticipated by Hale; claims 6, 9 and 14 under 35 U.S.C. § 102(b) as being anticipated

by Sastri; and claims 7 and 8 under 35 U.S.C. § 103 as being obvious over Sastri.[1]

OPINION

We have carefully considered all of the arguments advanced by appellant and the examiner and agree with appellant that the aforementioned rejections are not well founded. Accordingly, we reverse these rejections.

Rejection over Hale

Hale discloses a cobalt cemented carbide substrate which is to be coated to make a cutting tool insert (col. 2, lines

[1] Rejections which were made in the final rejection over U.S. 4,150,195 to Tobioka and U.S. 4,705,124 to Abrahamson are not included in the examiner's answer, and no explanation for this omission is given in the advisory action (paper no. 8) or in the examiner's answer. These rejections appear to have been withdrawn by the examiner, and are so treated in this appeal.

23-30). The substrate has a cobalt enriched zone which has a depth which may reach 50-75F and is produced by sintering the substrate in the presence of nitrogen (col. 3, lines 33-35; col. 3, line 56 - col. 4, line 1). This sintering also causes the cobalt enriched surface zone to be depleted in the B-1 cubic phase (col. 3, lines 48-51; col. 4, lines 1-3; col. 4, lines 35-38).

The examiner argues that the although Hale's cubic phase depleted substrate surface zone is not produced by coating as recited in appellant's claim 1, it is a distinct layer which can have a thickness within appellant's recited range and which contains no cubic carbides (answer, pages 2-3). Consequently, the examiner argues, Hale's substrate meets the limitations of that claim. *See id*. Appellant argues that one of ordinary skill in the art would have interpreted "depleted" to mean lessened rather than completely removed (reply brief, page 3). The examiner responds that appellant has not provided factual evidence that cubic carbides are present in Hale's substrate surface layer (supplemental answer (paper no.

13), page 4).

The examiner apparently considers cubic carbides to inherently be completely absent from Hale's cubic phase depleted surface layer. When an examiner relies upon a theory of inherency, "the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic *necessarily* flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Int. 1990). Inherency "may not be

established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." *Ex parte Skinner*, 2 USPQ2d 1788, 1789 (Bd. Pat. App. & Int. 1986). The examiner does not provide such reasoning. Instead, the examiner puts the initial burden on appellant to prove that no cubic carbides are present in the Hales' cubic phase depleted layer. This is improper, because it is the examiner who has the initial

burden of establishing a *prima facie* case of anticipation by pointing out where all of the claim limitations appear in a single reference. *See In re Spada*, 911 F.2d 705, 708, 15 USPQ2d 1655, 1657 (Fed. Cir. 1990); *In re King*, 801 F.2d 1324, 1327, 231 USPQ 136, 138-39 (Fed. Cir. 1986). Hale's cubic carbide depleted substrate surface layer is made by a different process than appellant's surface layer. Hale's layer is made by sintering the substrate in a nitrogen atmosphere to form a cubic carbide depleted layer (col. 3, line 56 - col. 4, line 1), whereas appellant's surface layer is formed by codepositing the tungsten carbide hard phase and cobalt binder without forming cubic carbides (specification, page 5, lines 29-34). The examiner has not provided technical reasoning as to why, regardless of the difference in the methods of forming these layers, Hale's cubic carbide phase depleted layer reasonably appears to necessarily have no cubic carbides.

Accordingly, we find that the examiner has not carried the burden of establishing a *prima facie* case of anticipation of appellant's claimed invention over Hale.

Rejections over Sastri

Sastri discloses coatings which are characterized by a microcrystalline, single-phase, solid solution structure with metalloids dissolved therein (col. 2, lines 17-21). The portion of Sastri relied upon by the examiner is Sastri's disclosure of prior art "hardfacing alloy coatings which are characterized by their two-phase structures comprising (1) a coarse grained (typically between 10 to 100 microns), face-centered-cubic, cobalt-based, continuous phase and (2) a randomly dispersed second phase of carbide, boride, etc., particles which are generally between about 1 to 10 microns in size" (col. 5, lines 5-12).

The examiner argues that "Sastri discloses that the claimed WC-Cr composite coatings on ceramics such as alumina are known (column 5, lines 5-15)" (answer, page 2). The portion of Sastri relied upon by the examiner, however, does not mention WC or

alumina. Appellant argues that the prior art crystalline cobalt referred to by Sastri is not a binder (brief, page 10).

The examiner responds that "Sastri expressly discloses that the cobalt is the continuous phase which the examiner concludes 'binds' the claimed particles. Again the appellant has failed to provide factual evidence [that] the claimed coating differs in
kind from the prior art and the rejection stands" (answer, page 4).[2]

It is the examiner who has the initial burden of establishing a *prima facie* case of anticipation or obviousness. *See Spada*, 911 F.2d at 708, 15 USPQ2d at 1657; *King*, 801 F.2d at 1327, 231 USPQ at 138-39; *In re Piasecki,* 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976). The examiner, however, has placed that initial burden on appellant. Before appellant must come forward with evidence, the examiner must

[2] The examiner refers to a reference no. 4,406,670 (answer, page 4). This reference is not included in the statement of the rejection and, therefore, is not properly before us. *See In re Hoch*, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970). Consequently, we have not relied upon this reference in reaching our decision.

establish a *prima facie* case of anticipation with respect to the rejection of claims 6, 9 and 14 over Sastri, and obviousness with respect to the rejection of claims 7 and 8 over that reference.

The examiner, however, has not explained why each element of rejected claims 6, 9 and 14 are disclosed by Sastri, or why each of the elements of claims 7 and 8 would have been fairly suggested, to one of ordinary skill in the art by Sastri. Regarding the point raised by appellant, i.e., that the prior art crystalline cobalt is not a binder, the examiner has provided no evidence or technical reasoning which shows that the prior art coarse grained, face-centered-cubic, cobalt-based continuous phase in Sastri is a binder for the randomly dispersed second phase of particles. The examiner has merely stated that she concludes that this is the case (answer, page 4), and that mere conclusion is not sufficient for establishing a *prima facie* case of anticipation or obviousness.

DECISION

The rejections of claims 1-5, 11-13 and 15-17 under 35 U.S.C. § 102(b) over Hale, claims 6, 9 and 14 under 35 U.S.C. § 102(b) over Sastri, and claims 7 and 8 under 35 U.S.C. § 103 over Sastri, are reversed.

REVERSED

CHUNG K. PAK Administrative Patent Judge	)	
CHARLES F. WARREN Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
TERRY J. OWENS Administrative Patent Judge	)	

TJO/ki

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