

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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**Ex parte** BRUCE M. WARNES,  
DAVID C. PUNOLA,  
JEFFERY S. SMITH,  
and  
DANIEL L. NEAR

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Appeal No. 1997-2023  
Application No. 08/197,497

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ON BRIEF

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Before JOHN D. SMITH, WALTZ, and LIEBERMAN, **Administrative Patent Judges**.

WALTZ, **Administrative Patent Judge**.

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1 through 19. Claims 20 through 25, the only other claims pending in this application, stand withdrawn from further consideration as directed to a nonelected

Appeal No. 1997-2023  
Application No. 08/197,497

invention (Final Rejection dated May 3, 1995, Paper No. 13, page 2).

According to appellants, the invention is directed to a method of forming an aluminide diffusion coating including an additive element by chemical vapor deposition on a substrate where first and second sources comprising aluminum and an additive element are disposed outside the coating retort (Brief, page 1).<sup>1</sup> Claim 1 is illustrative of the subject matter on appeal and a copy of this claim is reproduced below:

1. A method of forming by chemical vapor deposition on a substrate an aluminide diffusion coating including an additive element, comprising flowing a first halide precursor gas in a carrier gas in contact with a first source comprising aluminum disposed outside a coating retort to generate an aluminum halide first coating gas, flowing a second halide precursor gas in a carrier gas in contact with a second source comprising the additive element disposed outside the coating retort to generate a second halide coating gas, and introducing the first and second coating gases concurrently into a coating retort in which the substrate at coating temperature is disposed to codeposit aluminum and

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<sup>1</sup>It is noted that "Appellants' Response to Examiner's Answer" (hereafter "Response") dated Mar. 20, 1996, Paper No. 21, was refused entry by the examiner (Supplemental Examiner's Answer dated Sep. 16, 1996, Paper No. 22). Since the time period for appellants' petition under 37 CFR § 1.181 of this refusal has expired, appellants' Response has not been considered as part of the appeal record.

Appeal No. 1997-2023  
Application No. 08/197,497

the additive element on said substrate at the coating temperature for a time to form thereon an aluminide diffusion coating including said additive element.

The examiner has relied upon the following references as support for the rejections:

Sarin et al. (Sarin '384)	4,701,384	Oct. 20, 1987
Sarin et al. (Sarin '574)	4,890,574	Jan. 2, 1990
Punola et al. (Punola)	5,264,245	Nov. 23, 1993

Claims 1-3 stand rejected under 35 U.S.C. § 102(b) as anticipated by Sarin '384 (Answer, page 3). Claims 4-12 stand rejected under 35 U.S.C. § 103 as unpatentable over Sarin '384 in view of Sarin '574 (Answer, page 4). Claims 13-19 stand rejected under 35 U.S.C. § 103 as unpatentable over Sarin '384 in view of Sarin '574 further in view of Punola (Answer, page 7). We reverse all of the examiner's rejections for reasons which follow.

#### **OPINION**

##### *A. The Rejection under § 102(b)*

"Under 35 U.S.C. § 102, every limitation of a claim must identically appear in a single prior art reference for it to anticipate the claim. *In re Bond*, 910 F.2d 831, 832, 15 USPQ2d 1566, 1567 (Fed. Cir. 1990)." *Gechter v. Davidson*, 116 F.3d 1454, 1457, 43 USPQ2d 1030, 1032 (Fed. Cir. 1997). Claim 1 on appeal recites "[a] method of forming by chemical vapor

deposition on a substrate *an aluminide diffusion coating . . .*” by certain process steps, culminating in the codeposition of aluminum and an additive element on a substrate “to form thereon *an aluminide diffusion coating* including said additive element.” (Claim 1, emphasis added).

The examiner fails to address the above emphasized limitations of claim 1 on appeal, namely the examiner fails to point out where such a limitation is described by Sarin '384 within the meaning of 35 U.S.C. § 102(b). The examiner finds that Sarin '384 “teaches manufacturing composite coatings on cemented carbide substrates.” (Answer, page 3). Sarin '384 discloses a composite ceramic coating having at least two phases, comprising a continuous oxide layer with discrete particles dispersed therein (col. 1, ll. 43-54). An aluminide diffusion coating is known in the art as the reactive bonding of aluminum to the substrate in a diffusion layer.<sup>2</sup> Accordingly, the examiner has failed to meet the initial burden of establishing that every limitation of the claimed subject matter is described by the cited reference.

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<sup>2</sup>See Punola, col. 1, ll. 18-31 and col. 3, ll. 7-27. See also Benander et al., U.S. Patent No. 4,698,244, issued Oct. 6, 1987, of record in this application (col. 1, ll. 1-9; col. 6, ll. 45-62).

Furthermore, Sarin '384 discloses the additive metal (zirconium) was placed in a separate vessel disposed *inside* the reactor while aluminum chips were placed in a vessel *outside* the reactor (col. 4, ll. 29-36). Claim 1 on appeal recites that both source metals (the aluminum and the additive element) are disposed outside the coating retort.

For the foregoing reasons, we determine that the examiner has not established that every limitation of claim 1 on appeal is described by Sarin '384. Accordingly, the rejection of claims 1-3 under 35 U.S.C. § 102(b) as anticipated by Sarin '384 is reversed.

*B. The Rejections under § 103*

The deficiencies of Sarin '384 as discussed above are also present in the rejections advanced against claims 4-12 and 13-19 under section 103. Sarin '574 does not remedy the deficiency of the primary reference to Sarin '384 regarding the formation of an aluminide coating since Sarin '574 is directed to the same type of two phase ceramic oxide coating (see col. 5-6). Furthermore, contrary to the examiner's analysis of Sarin '574 (Answer, pages 5-6), this reference does not disclose or suggest the sequential flow of the first halide precursor gas through the aluminum source, leaving an unreacted portion to later react with

Appeal No. 1997-2023  
Application No. 08/197,497

a second source as recited in claim 4 on appeal. As shown by Figure 3 of Sarin '574, the halide precursor gas enters reaction chamber **21** through the inlet tube **10** and is distributed by the gas distributor **22** across the entire cross section of the reaction chamber **21**, with a portion of the halide gas passing through tube **28** to react with metal **27** while the remainder of the precursor halide gas flows outside of tube **28** to react with metal **26** (Sarin '574, col. 4, l. 62-col. 5, l. 4). Accordingly, Sarin '574 does not disclose or suggest any unreacted portion of a first precursor halide gas or that this portion of the first halide gas later contacts the second metal source (silicon), as required by the subject matter of claim 4 on appeal.

The examiner has applied Punola as a secondary reference in the rejection of claims 13-19. Punola was cited by the examiner for its teaching of a CVD process using alloys of aluminum as the "reactivity-altering material" (Answer, page 7). Accordingly, Punola does not remedy the deficiencies noted above with respect to the Sarin '384 and '574 references. Furthermore, the examiner has not explained why one of ordinary skill in the art would have combined the two Sarin references to two phase ceramic oxide coatings with the aluminide diffusion coating process and

Appeal No. 1997-2023  
Application No. 08/197,497

materials of Punola. A proper analysis under § 103 requires consideration of whether the prior art would have suggested to those of ordinary skill in the art that they should carry out the claimed process and whether the prior art would also have revealed that in so carrying out, those of ordinary skill in the art would have a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

For the foregoing reasons, we determine that the examiner has failed to establish a *prima facie* case of obviousness in view of the reference evidence.<sup>3</sup> Accordingly, we cannot sustain the examiner's rejections under § 103.

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<sup>3</sup>We have not considered Benander et al., U.S. Patent No. 4,698,244, as part of the examiner's reference evidence because this reference was not cited in the statement of the rejection (see the Answer, pages 7 and 10). "Where a reference is relied on to support a rejection, whether or not in a 'minor capacity,' there would appear to be no excuse for not positively including the reference in the statement of rejection." *In re Hoch*, 428 F.2d 1341, 1342 n.3, 166 USPQ 406, 407 n.3 (CCPA 1970).

Appeal No. 1997-2023  
Application No. 08/197,497

*C. Other Issues*

It is noted that related Application No. 08/197,478, Appeal No. 1998-0776, contains a provisional rejection under the judicially created doctrine of obviousness-type double patenting over the claims of this application. Upon the return of this application to the jurisdiction of the examiner, the examiner should reconsider whether a provisional obviousness-type double patenting rejection should also be made in this application. See *MPEP*, §§ 804(B) and 804.02, 7th ed., July 1998.

Appeal No. 1997-2023  
Application No. 08/197,497

*D. Summary*

The rejection of claims 1-3 under 35 U.S.C. § 102(b) over Sarin '384 is reversed. The rejection of claims 4-12 under 35 U.S.C. § 103 over Sarin '384 in view of Sarin '574 is reversed. The rejection of claims 13-19 under 35 U.S.C. § 103 over Sarin '384 in view of Sarin '574 and Punola is reversed.

The decision of the examiner is reversed.

**REVERSED**

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JOHN D. SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
THOMAS A. WALTZ	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
PAUL LIEBERMAN	)	
Administrative Patent Judge	)	

TAW:hh

Appeal No. 1997-2023  
Application No. 08/197,497

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