

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

7-15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TATSUHIKO SHIBUYA
and
YOSHIO HAGIWARA

Appeal No. 2004-2278
Application No. 09/302,471

ON BRIEF

Before PAK, WARREN, and TIMM, *Administrative Patent Judges*.
TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

This appeal involves claims 7-15 which are all the claims pending in the application. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 134.

INTRODUCTION

Claims 7 and 13 are illustrative of the subject matter on appeal:

7. A method for the preparation of a coating solution which comprises the steps of:

(a) dissolving a polyalkoxy silane compound represented by the general formula



in which R^1 is a hydrogen atom or a monovalent hydrocarbon group, R^2 is an alkyl group and the subscript n is 2, 3 or 4, in a first organic solvent, which is an alcohol solvent, to give a solution, in a concentration in the range from 1 to 5% by weight calculated as SiO_2 ;

(b) admixing the solution with a basic compound and water to effect hydrolysis of the polyalkoxy silane compound so as to give an organopolysiloxane as a hydrolysis-condensation product thereof; and

(c) replacing the first organic solvent in the solution with a second organic solvent, which is an aprotic polar organic solvent, in such an amount that the concentration of the organopolysiloxane in the solution is in the range from 5 to 25% by weight calculated as SiO_2 .

13. A method for the formation of a silica-based coating film on the surface of a substrate which comprises the steps of:

(1) coating the surface of a substrate with a coating solution comprising, as a uniform solution,

(A) an organic solvent, and

(B) an organopolysiloxane, which is a hydrolysis-condensation product of a polyalkoxy silane compound represented by the general formula



in which R^1 is a hydrogen atom or a monovalent hydrocarbon group, R^2 is an alkyl group and the subscript n is 2, 3 or 4, dissolved in the organic solvent in the presence of a basic compound, to form a coating layer;

(2) drying the coating layer by heating to form a dried coating layer;

(3) subjecting the dried coating layer to a baking treatment at a temperature of 350°C or higher.

As evidence of unpatentability, the Examiner relies upon the following prior art references:¹

Tomikawa et al. (Tomikawa)	JP 6-83063	Mar. 25, 1994
Takei et al. (Takei)	JP 9-208237	Aug. 12, 1997

The claims stand rejected as follows:

1. Claims 7 and 10-15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Takei.
2. Claims 8 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takei as applied in the first rejection and further in view of Tomikawa.

We reverse. Our reasons follow.

OPINION

Claims 7 and 10-15 have been rejected as anticipated by Takei. In establishing anticipation, the burden is on the Examiner to show that Takei discloses, either expressly or inherently, something embodying every limitation of the claim. *Rowe v. Dror*, 112 F.3d 473, 478, 42 USPQ2d 1550, 1553 (Fed. Cir. 1997). What we initially note about the Examiner's

¹We rely upon and cite to the English language translations of record for each of the references relied upon by the Examiner.

rejection is that it does not provide a claim-by-claim analysis nor does it particularly point out where in Takei each of the limitations of the claims is found in the reference. Once one focuses on individual claims and makes a comparison of the claim limitations with the prior art, the deficiencies of the rejection become apparent. At the outset, we focus on the two independent claims, claims 7 and 15.

Starting with claim 7, we note that this claim is directed to a method for the preparation of a coating solution. Step (a) of claim 7 is a step of dissolving a polyalkoxy silane from a particular class of compounds in a first organic solvent, which is an alcohol solvent, to obtain a solution containing 1-5 wt. % polyalkoxy silane calculated as SiO_2 . According to the specification, a useful polyalkoxy silane is tetramethoxy silane or, as referred to by the Examiner, TMOS.

The Examiner finds that Takei teaches a method of forming a coating composition and coating a substrate wherein 100g TMOS, 500g of methanol, 360g of DMF (dimethylformamide), and 266g of THF alcohol (tetrahydrofurfuryl alcohol) are admixed thereby yielding a concentration on the basis of SiO_2 of about 3% by weight (Answer, p. 3). While the Examiner does not provide a citation to Takei for this finding, it appears that the Examiner is relying on Example 1. We, however, do not find support in Example 1, nor in other portions of Takei, for the finding that Takei uses TMOS in the initial admixture. What Takei uses is a partial polycondensate of TMOS. The Examiner has not provided persuasive evidence that the partial polycondensate of TMOS is the same as TMOS itself. Nor has the Examiner provided evidence

or persuasive reasoning indicating that the partial polycondensate of TMOS would meet the requirements of the chemical formula recited in claim 7. We further cannot agree with the Examiner that the polyalkoxy silane required by claim 7 is necessarily present in the solution of Takei as unreacted monomer. Takei provides no information on the origin of the partial polycondensate nor its purification level. We also note that the step of claim 7 is a step of dissolving. The Examiner has provided no evidence that the partial condensate of TMOS is in solid form such that it dissolved when mixed with alcohol and the other ingredients as described by Takei.

In step (b) of claim 7, polyalkoxy silane is reacted to form an organopolysiloxane and, in step (c), the first organic solvent, which is an alcohol solvent, is replaced with a second organic solvent, which is an aprotic polar organic solvent, to obtain a solution with a concentration of 5-25 wt.% organosiloxane calculated as SiO_2 . According to the specification, dimethylformamide, or as referred to by the Examiner, DMF, is an aprotic polar organic solvent.

The Examiner has not provided sufficient evidence that Takei replaces a first solvent, which is an alcohol solvent, with a second solvent, which is an aprotic polar organic solvent, as claimed. According to the findings of the Examiner “[d]uring processing the composition passes through 5-25% by weight silane condensate in terms of SiO_2 during drying wherein the alcohol solvent is volatilized and replace [sic] with DMF” (Answer, p. 3). This does not meet the requirements of claim 7 because DMF is contained in the first solvent. Volatilization of the

alcohol during drying does not result in replacement of the first solvent with a second solvent.

The solvent is removed during volatilization, but it is not “replaced” with anything.²

We find that the Examiner has not established anticipation with respect to the subject matter of claims 7 and 10-12.

Turning to claim 13, this claim is directed to a method of forming a coating film on the surface of a substrate. The Examiner finds that Takei teaches coating in paragraph [0002] of the translation as this paragraph describes overlying batches of sol. This paragraph, however, discusses a prior art process. There is no description of overlying batches of sol in the discussion of Takei’s inventive process and it is this process which the Examiner relies upon for the other limitations of the claim. While such picking and choosing might be appropriate to establish the obviousness of claimed subject matter to one skilled in the art, anticipation cannot be based on the combination of disclosures which are not directly related to each other by the teachings of the cited reference. *In re Arkley*, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972).

Alternatively, the Examiner finds that the step of pouring the sol into a mold as described in Example 1 of Takei is indistinguishable from a simple coating step. But claim 13 requires the formation of a silica-based coating *film* on the surface of a *substrate*. The Examiner provides no

²See the accompanying dictionary definition for “replace.” The use of “replace” in the specification is consistent with the second and third dictionary definitions, i.e., “to take the place of especially as a substitute or successor” and “to put something new in the place of <replace a worn carpet>.” See also the statement that “REPLACE implies a filling of a place once occupied by something lost, destroyed, or no longer usable or adequate <replaced the broken window>.” Merriam-Webster’s Collegiate Dictionary, Electronic ed., version 2.5 (2000).

evidence that such a film is formed in the method of Takei. Nor can we agree that pouring material into a mold is the same as forming a coating film on a substrate as those words are used by Appellants.

We also note that the Examiner has not sufficiently addressed the limitation of step (1)(B) which requires that the coating solution contain an organosiloxane derived from a particular class of polyalkoxy silane compounds dissolved in solvent in the presence of a basic compound.

We find that the Examiner has not established anticipation with respect to the subject matter of claims 13-15.

Claims 8 and 9 by virtue of their dependence on claim 7, include all the limitations of claim 7. With respect to the obviousness rejection of claims 8 and 9 over Takei in view of Tomikawa, Tomikawa, as applied by the Examiner, does not remedy the deficiencies discussed above as Tomikawa is relied upon only for the teaching of the specific basic compounds of claims 8 and 9.

We conclude that the Examiner has failed to establish a *prima facie* case of obviousness with respect to the subject matter of claims 8 and 9.

CONCLUSION

To summarize, the decision of the Examiner to reject claims 7 and 10-15 under 35 U.S.C. § 102(b) and claims 8 and 9 under 35 U.S.C. § 103(a) is reversed.

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