

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. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* MICHAEL D. EVANS, TAE Y. KIM,  
HENRY H. LAW AND TE-SUNG WU

---

Appeal No. 1999-0544  
Application No. 08/324,842

---

ON BRIEF

---

Before GARRIS, LIEBERMAN, and TIMM, *Administrative Patent Judges*.  
TIMM, *Administrative Patent Judge*.

***DECISION ON APPEAL***

This is a decision on appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 1-21, which are all of the claims pending in this application.

### **BACKGROUND**

Appellants' invention relates to a process for the selective deposition of metal on substrates (specification at 1, ll. 4-5). Claim 1 is illustrative:

1. A method for forming a metallic coating on a surface of a substrate, comprising the steps of:

applying a layer of energy definable resist material on a ceramic substrate;

patterning the resist layer such that a first portion of the substrate surface is covered by the resist layer and a second portion of the substrate surface is not covered by the resist layer;

treating the second portion of the surface with a reagent to promote the electroless plating of metal onto the substrate;

drying the surface of the substrate after treating the surface;

removing the resist layer;

exposing the surface to an electroless metal plating bath such that metal is formed on the surface; and

heating the surface of the substrate to about 180°C to about 350°C for a time sufficient for the metal to adhere to the substrate.

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

Honjo et al. (Honjo)	4,510,179	Apr. 9, 1985
Akoh	4,748,086	May 31, 1988
Reyes et al. (Reyes)	4,685,030	Aug. 4, 1987
Dickirson et al. (Dickirson)	5,219,292	June 15, 1993
Portner	5,288,313	Feb. 22, 1994

All the claims stand rejected under 35 U.S.C. § 103 as follows:

1. To reject claims 1-2, the Examiner relies on Honjo in view of Portner as evidence of obviousness.
2. To reject claims 5, 6, and 10-12, the Examiner relies on Honjo in view of Portner and Dickirson as evidence of obviousness.
3. To reject claims 3 and 4, the Examiner relies on Honjo in view of Portner and Keyes as evidence of obviousness.
4. To reject claims 7-9 and 13-21, the Examiner relies on Honjo in view of Portner and Akoh as evidence of obviousness.

We reverse all the rejections for the following reasons.

### ***OPINION***

Of the appealed claims, two are independent claims, claims 1 and 13. We begin our discussion with claim 1. Claim 1 requires heating the surface of the substrate in a specific temperature range for a time sufficient for “the metal” to adhere to the substrate. The metal referenced by the claim is the metal formed on the surface by electroless plating. To adhere to the substrate, the electrolessly plated metal must be present on the substrate. We conclude that the claim requires, as argued by Appellants (Brief at 4), that the substrate be heated *after* the layer of metal is electrolessly plated thereon.

In rejecting claim 1, the Examiner acknowledges that Honjo fails to explicitly teach the claimed heating step (Answer at 4) and then makes a finding that Honjo “does teach heat-treating a metal coated ceramic substrate so as to make a stable metallic layer on the substrate.” (*Id.*). The Examiner goes on to conclude that “Honjo et al. (4,510,179) fairly suggest to one skilled in the art that drying/heating a coating is advantageous thereby producing a stable coating.” (*Id.*).

We cannot agree that Honjo provides sufficient evidence of obviousness with regard to the heating step. While Honjo describes a step of heating a metal coated substrate, “the metal” is formed from a paste and the heating takes place before plating (Honjo at col. 2, ll. 27-34). Honjo does not perform a step of heating within the claimed temperature range after electrolessly plating as required by claim 1.

It is the Examiner’s position that Honjo fairly suggests to one skilled in the art that drying/heating a coating is advantageous thereby producing a stable coating. However, the suggestion in Honjo is to heat a paste to form a silver coating. (*Id.* at col. 2, ll. 35-39). Honjo teaches that heating a paste is advantageous to produce a stable coating from the paste but does not provide a basis to conclude that heating an electrolessly plated coating is advantageous. Electroless plating proceeds by a different mechanism than coating by heating a paste. No other evidence is relied upon to show the particular heating step claimed. The Examiner provides an insufficient basis upon which to conclude that those of ordinary skill in the art would have heated the surface of the substrate to about 180 °C to about 350 °C for a time sufficient for the electrolessly plated metal on its surface to adhere to the substrate.

Moreover, we agree with Appellants that the Examiner improperly combined two separate processes disclosed by Honjo (Brief at 5). Specifically, the Examiner combined the prior art partial plating method wherein the substrate is masked with resist (Honjo at col. 1, ll. 49-55), with Honjo's inventive process which contains no masking step but which describes a heating step. Anytime a teaching is modified, there must be a showing of a suggestion or motivation to make the modification. *See In re Lee*, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002). This is true even if two distinct teachings are contained in one reference and modification of one would be obvious in view of the other. Honjo does not teach a process with both a heating step and a masking step. The Examiner did not provide a reasonably specific reason, suggestion, or motivation for the combination.

To establish a *prima facie* case of obviousness, the Examiner must show some objective teaching in the prior art or otherwise provide a basis to believe that knowledge generally available to those of ordinary skill in the art would have led those artisans "to make the specific combination that was made by the applicant." *In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). With respect to the process of claim 1, such evidence is lacking. Therefore, we conclude that the Examiner did not establish a *prima facie* case of obviousness with respect to claim 1 and the claims dependent thereon.

We now focus on the other independent claim, claim 13. Claim 13 requires a step of fire-cleaning a substrate at a temperature of about 800 °C to about 1500 °C. The Examiner

acknowledges that neither Honjo nor Portner describe such a step of fire-cleaning (Answer at 8). However, the Examiner concludes that it would have been obvious to use a temperature treatment step described in Akoh in the process of Honjo because of the reasonable expectation of similar results (*Id.* at 9). The problem is that the temperature treatment step of Akoh is not a fire-cleaning step, it is a sintering step.

Sintering is not the same as fire-cleaning. Sintering is a method of forming the ceramic substrate whereas fire-cleaning is a step of treating an already formed substrate. The fact that Akoh sinters at temperatures within the range recited in the claim does not transform the sintering process into a fire-cleaning process. Akoh provides little evidence that fire-cleaning as claimed was obvious to those of ordinary skill in the art at the time of invention.

The Examiner also states that “it is well known in the art to ‘pretreat’ a substrate which is going to be subsequently coated so as to achieve a ‘clean’ surface thereby increasing the adhesion of the coating to the substrate” and further states that “[c]leaning by heating ... is well known and conventional in the art.” (Answer at 12; see also Final Rejection at 10). We take this statement as fact as it remains unchallenged. However, we regard facts found in such a manner with an eye toward narrowing the scope of any conclusions to be drawn therefrom. *See In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420-21 (CCPA 1970).

The Examiner’s statement does not establish that it was well known to fire-clean a substrate at temperatures of about 800 °C to about 1500 °C, the statement establishes only that some sort of heating to clean was well known. There is insufficient evidence on the record

indicating that it would have been obvious to one of ordinary skill in the art at the time of invention to fire-clean as recited in the process of the claim.

We conclude that the Examiner has not established a *prima facie* case of obviousness with respect to the subject matter of claim 13 and those claims dependent thereon.

### ***CONCLUSION***

To summarize, the decision of the Examiner to reject claims 1-21 under 35 U.S.C. § 103 is reversed.

REVERSED

BRADLEY R. GARRIS  
Administrative Patent Judge

PAUL LIEBERMAN  
Administrative Patent Judge

CATHERINE TIMM  
Administrative Patent Judge

)  
)  
)  
)  
)  
) BOARD OF PATENT  
) APPEALS  
) AND  
) INTERFERENCES  
)  
)  
)  
)

jg/CT

Appeal No. 1999-0544  
Application No. 08/324,842

Page 9

S. H. DWORETSKY  
ATT BELL LABORATORIES  
600 MOUNTAIN AVENUE  
P. O. BOX 636  
MURRAY HILL, NJ 07974-0636

