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

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte DENNIS FOSTER,
LARRY M. MCHUGH
and HEINRICH ANDREAS MOEBIUS

Appeal No. 2005-1099
Application No. 09/334,974

ON BRIEF

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

PAWLIKOWSKI, **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, 2, 4, 5, 7-36, and 65-67. Claims 1, 7, 10, 26, 65, and 66 are representative of the subject matter on appeal and are set forth below:

> 1. A process of depositing a multi layer coating on at least a portion of an article surface comprising:

depositing by electroplating at least one metal or metal alloy containing layer on at least a portion of said article surface;

subjecting said article surface having said at least one electroplated layer thereon to pulses of air to dry and clean said electroplated article surface; and

depositing by physical vapor deposition on at least a portion of said dry and clean electroplated layer at least one layer comprising a material selected from the group consisting of refractory metal, refractory metal alloy, refractory metal compound, and refractory metal alloy compound on at least a portion of said electroplated layer, wherein said refractory metal compound is selected from the group consisting of nitrides, carbides, carbonitrides, oxides and reaction products of said refractory metal, oxygen and nitrogen, and wherein said refractory metal alloy compound is selected from the group consisting of nitrides, carbides, carbonitrides, oxides and reaction products of said refractory metal alloy, oxygen and nitrogen.

7. The process of claim 1 wherein said refractory metal compound is selected from nitrides, oxides and reaction products of refractory metal, oxygen and nitrogen, and said refractory metal alloy compound is selected from nitrides, oxides and reaction products of refractory metal alloy, oxygen and nitrogen.

10. The process of claim 1 wherein said electroplating comprises electroplating at least one layer comprised of copper on said at least a portion of the surface of said article to provide at least one electroplated copper layer, electroplating at least one layer comprised of nickel on said at least one electroplated copper layer to provide at least one electroplated nickel layer, and electroplating at least one layer comprised of chrome directly on said at least one electroplated nickel layer.

26. The process of claim 22 wherein said refractory metal compound is selected from nitrides, oxides and reaction products of refractory metal,

oxygen and nitrogen, and wherein said refractory metal alloy compound is selected from nitrides, oxides and reaction products of refractory metal alloy, oxygen and nitrogen.

65. The process of claim 1 wherein the step of drying said article surface occurs between 2 minutes and 5 minutes.

66. The process of claim 1 wherein the step of subjecting said article surface to pulses of air atomizes water droplets on said articles surface.

The examiner relies upon the following references as evidence of unpatentability:

Moysan, III et al. (Moysan)	5,413,874	May 09, 1995
Pudem	5,558,759	Sep. 24, 1996
Welty et al. (Welty)	5,922,478	Jul. 13, 1999
Eichholzer, Ernst (European Patent Application)	0 486 711 A1	Nov. 19, 1990

Claims 1, 2, 4, 7, 8, 9, 21-23, 26-28 and 65-67 stand rejected under 35 U.S.C. § 103 as being obvious over Moysan in view Eichholzer.

Claims 1, 2, 4, 5, 7-9, 21-24, 26-36, and 65-67 stand rejected under 35 U.S.C. § 103 as being obvious over Welty in view of Eichholzer.

Claims 10-20 stand rejected under 35 U.S.C. § 103 as being obvious over Welty in view of Eichholzer.

Appellants group the claims according to the groupings made on page 3 of the brief. To the extent that any one claim is specifically argued regarding patentability, we consider such claim in this appeal. See 37 CFR § 1.192(c)(7)(2003); and 37 CFR § 41.37(c)(1)(vii)(effective September 13, 2004; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21

(September 7, 2004)). Our consideration of a particular claim is indicated in each rejection, respectively, below.

OPINION

We have carefully reviewed the appellants' brief and reply brief and the examiner's answer and the evidence of record. This review has led us to the following determinations.

I. The 35 U.S.C. § 103 rejection of claims 1, 2, 4, 7-9, 21-23, 26-28, and 65-67 under 35 U.S.C. § 103 as being obvious over Moysan in view Eichholzer

We consider claims 1, 7, 65, and 66 in this rejection.

The examiner's position for this rejection is set forth on pages 3-8 of the answer. Appellants' position regarding this rejection is set forth on pages 3-8 of the brief, and appellants also set forth arguments in the reply brief.

Appellants first argue that Eichholzer is non-analogous art to appellants' invention, and also to Moysan. We disagree. We refer to the examiner's comments regarding this issue, beginning on page 17 of the answer. For those reasons, we are not persuaded by appellants' arguments. We also note that the test of whether a reference is from an analogous art is first, whether it is within the field of the inventor's endeavor, and second, if it is not, whether it is reasonably pertinent to the particular problem with which the inventor was involved. See In re Wood, 599 F.2d 1032, 1036, 202 USPQ 171, 174 (CCPA 1979). A reference is reasonably pertinent if, even though it may be in a different field of endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering the inventor's problem. See In re Clay, 966 F.2d 656, 659, 23 USPQ2d 1058,

1061 (Fed. Cir. 1992). In the instant case, the examiner has established that Eichholzer (as well as Moysan) is within the field of the inventor's endeavor.

Appellants also argue that there is no suggestion in Moysan or Eichholzer to modify Moysan as proposed by the examiner in the rejection. We disagree. As stated by the examiner, beginning on page 19 of the answer, Eichholzer provides sufficient motivation for utilizing the pulse drying process of Eichholzer in the process of Moysan. The examiner clearly explains the benefits described in Eichholzer in so doing.

On page 6 of the brief, appellants refer to column 6, lines 52-59 of Moysan (brief, page 6), and state that Moysan teaches a sputter cleaning method by applying power to the cathodes to achieve a current flow, and that the electroplated surface can also be cleaned by a low pressure etch process by applying a negative D.C. current to the cathodes to achieve a current flow. As such, appellants argue that Moysan need not employ any other method of cleaning in light of these teachings.

Upon our review of Moysan in this regard, we find that the cleaning method discussed in column 6 at lines 52-59 is in regard to the process step when the plated escutcheons are in a sputter ion plating vessel. However, Moysan teaches that the escutcheons are placed, for six minutes, in a conventional ultrasonic alkaline cleaner bath. See column 5, lines 46-48. After this cleaning step, the escutcheons are then rinsed and placed in a conventional alkaline electro cleaner bath for about two minutes. Beginning at line 62 in column 5 of Moysan, Moysan teaches that the escutcheons are placed in a semi-bright nickel plating bath for about 10 minutes to deposit a nickel layer on the surface of the escutcheon. After this step, the escutcheon is rinsed twice and then placed in a bright nickel plating bath

for about 24 minutes. See column 6, lines 4-6. So, contrary to appellants' assertion, Moysan teaches other kinds of cleaning steps. Meanwhile, Eichholzer teaches, for an electrode plating process, that a cleaning method, using high frequency pulsating jets of compressed air, is beneficial because (1) no drops or traces of drops remain on the dried objects, and (2) the electrolytes from the electrolyte bath are recovered. Hence, as stated by the examiner, there is motivation in the applied references to modify Moysan by using the cleaning method taught in Eichholzer. We specifically refer to the examiner's statements made on pages 19-20 of the answer in this regard.

Appellants also argue that the method employed in Eichholzer does not clean the surface, but rather pushes the liquid electrolytes off the surface. We disagree. As pointed out by the examiner, beginning on page 22 of the answer, Eichholzer discloses that the process is "for the drying of the objects" and provides "spot free dryness." The examiner also points out that Eichholzer discloses "a one time passage of the nozzle device along the objects is generally sufficient to dry them completely." Hence, we agree with the examiner, that Eichholzer method does clean the surface. Appellants' same method cleans the surface; hence, so does Eichholzer's same method clean the surface.

With respect to claim 7, appellants argue that Moysan does not teach the deposition of layer 24 by physical vapor deposition. We disagree. We refer to page 24 of the answer regarding the examiner's statements. Also, Moysan teaches in column 4, lines 23-27, that techniques such as vacuum coating or physical vapor deposition, such as ion sputtering and the like, are used. In column 4, beginning at lines 63, Moysan states that reactive ion sputter is generally similar to ion sputter

deposition, except that a reactive gas which reacts with the dislodged target material is introduced into the chamber. In column 5, at lines 15-21, Moysan teaches that layer 24 is deposited on layer 22, by any of the well-known and conventional plating or deposition processes, such as vacuum coating, reactive sputter ion plating, and the like. The preferred method is reactive ion sputter plating. As discussed by the examiner on page 24 of the answer, this is a form of physical vapor deposition.

With regard to claim 65, appellants argue, on page 8 of the brief, that this claim recites that the step of drying the article surface occurs between two minutes and five minutes. As pointed out on page 25 of the answer by the examiner, Eichholzer teaches, in the paragraph bridging pages 3-4 of the English translation, that it is possible to adjust the open time, as well as the opening and closing frequency, of valve 11, depending on the application. Therefore, Eichholzer suggests that the time can be varied. As such, the time recited in claim 65 is prima facie obvious.

With regard to claim 66, on page 8 of the brief, appellants argue that claim 66 recites the step of subjecting the article surface “to pulses of air atomizes water droplets on the article surface”. Appellants argue that Eichholzer and Moysan do not suggest this claimed feature. We disagree. We refer to the abstract of Eichholzer wherein it states that “[t]he pulsating compressed air jets dispel the liquid. As individual amounts or drops of the liquid to be blown off return to the original spot after a particular pulse of a compressed air due to wetting power or gravity, they will be dispelled by the immediately flowing pulse, **and are further reduced in size and blown away**” [emphasis added]. This further reduction in size indicates that

the air further reduces the water droplets in size such that they are blown away. In this way, the air atomizes the water droplets on the surface of the article.

In view of the above, we therefore affirm the 35 U.S.C. § 103 rejection of claims 1, 2, 4, 7-9, 21-23, 26-28, and 65-67 as being obvious over Moysan in view of Eichholzer.

II. The 35 U.S.C. § 103 rejection of claims 1, 2, 4, 5, 7-9, 21-24, 26-36, and 65-67 as being obvious over Welty in view of Eichholzer

We consider claims 1, 7, 65, and 66 in this rejection.

The examiner's position for this rejection is set forth on pages 8-15 of the answer. Appellants' position for this rejection is set forth on pages 9-10 of the brief, and appellants also provide comments in the reply brief.

Appellants argue that Eichholzer is non-analogous art to appellants' invention and to Welty. For the same reasons, discussed supra, in the aforementioned obviousness rejection, we are not convinced by appellants' argument, and we also refer to the examiner's position on pages 28-30 of the answer, in this regard.

On page 10 of the brief, appellants argue that there is no suggestion to modify Welty in the manner proposed by the examiner. Appellants refer to column 8, lines 32-37 of Welty, and state that Welty subjects the electroplated faucets to a high-bias plasma cleaning. Appellants conclude that Welty does not suggest any other cleaning method. Brief, page 11.

As discussed in the aforementioned obviousness rejection, Eichholzer provides motivation to utilize the pulsating jets of compressed air in an electroplating process, as a method of cleaning. Eichholzer states that the method used to remove the

electrolyte provides for no drops or traces of drops remaining on the dried object (spot free dryness) and also allows for recovery of electrolyte. These teachings are sufficient motivation to utilize this cleaning process, in conjunction with the kind of cleaning method set forth in Welty.

On page 11 of the brief, appellants again argue that the combination does not suggest all the claimed features, e.g., appellants argue again that Eichholzer does not teach that the compressed air cleans the surface of the object. For the same reasons discussed, supra, we disagree.

On pages 12-13 of the brief, appellants again argue the patentability of claims 65 and 66, using their same reasons, discussed, supra, in the previous obviousness rejection. Hence, for the same reasons that we were not convinced by appellants' aforementioned arguments regarding claims 65 and 66, we are not convinced here.

In view of the above, we affirm the 35 U.S.C. § 103 rejection of claims 1, 2, 4, 5, 7-9, 21-24, 26-36, and 65-67 under 35 U.S.C. § 103 as being obvious over Welty in view Eichholzer.

III. The 35 U.S.C. § 103 rejection of claims 10-20 as being obvious over Welty in view of Eichholzer and further in view of Pudem

We consider claim 10 in this rejection.

The examiner's position for this rejection is set forth pages 14-17 of the answer. Appellants' position for this rejection is set forth on pages 13-14 of the brief, and also on pages 2-3 of the reply brief.

Appellants' basic argument is that claim 10 requires an electroplated copper layer that is coated with an electroplated

nickel layer, that is then coated with a layer comprised of chrome.

Appellants state that the combination of references does not teach this sequential layering. We agree. We note that on page 39 of the answer, the examiner rebuts and states that Pudem teaches "a first copper plating step is performed and thereafter, to form a brass finish, nickel and then chrome are plated and refers to column 10 lines 1-19." Our review of Pudem in this regard reveals otherwise. That is, in column 10 at lines 1-20, Pudem deposits a copper layer, that is then electroplated with a nickel layer, that is then electroplated with a brass layer, that is then coated with a chrome layer. Therefore the layering is different in Pudem.

In view of the above, we therefore reverse the rejection of claims 10-20 as being obvious over Wilty in view of Eichholzer and further in view Pudem.

IV. Conclusion

The 35 U.S.C. § 103 rejection of claims 1, 2, 4, 7-9, 21-23, 26-28, and 65-67 under 35 U.S.C. § 103 as being obvious over Moysan in view of Eichholzer is affirmed.

The 35 U.S.C. § 103 rejection of claims 1, 2, 4, 5, 7-9, 21-24, 26-36, and 65-67 as being obvious over Welty in view of Eichholzer is affirmed.

The 35 U.S.C. § 103 rejection of claims 10-20 as being obvious over Welty in view of Eichholzer and further in view of Pudem is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv)(effective September 13, 2004; 69 Fed. Reg. 49960 (August 12, 2004); 1286 Off. Gaz. Pat. Office 21 (September 7, 2004)).

AFFIRMED-IN-PART

CHUNG K. PAK Administrative Patent Judge	)
TERRY J. OWENS Administrative Patent Judge	)BOARD OF PATENT) APPEALS AND) INTERFERENCES
BEVERLY A. PAWLIKOWSKI Administrative Patent Judge	)

BAP/sld

CARLSON, GASKEY & OLDS, P.C.
400 WEST MAPLE ROAD
SUITE 350
BIRMINGHAM, MI 48009