

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 SUBHAS BOTHRA,
HARLAN LEE SUR, JR. and VICTOR LIANG

Appeal No. 2001-0397
Application No. 09/304,798

ON BRIEF

Before WILLIAM SMITH, DELMENDO and POTEATE, **Administrative Patent Judges**.

POTEATE, **Administrative Patent Judge**.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's refusal to allow claims 10-24, which are all of the claims pending in the application.

Claim 10 is representative of the subject matter on appeal and is reproduced below:

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10. A system for making an air capacitive hole for a pressure transducer structure, the air capacitive hole lying between a bottom metallization feature and a top metallization feature, the system for making the air capacitive hole comprising:

a plasma etcher for plasma etching a bottom metallization layer to form the bottom metallization feature that is not in electrical contact with a substrate;

a deposition chamber for depositing a dielectric layer over the bottom metallization feature, the dielectric layer having a tungsten plug that is in contact with the bottom metallization feature;

the plasma etcher being configured to etch a top metallization layer to form the top metallization feature that substantially overlies the tungsten plug, but leaves an opening down to the tungsten plug; and

a bath for submersing the pressure transducer structure into a basic solution, such that the tungsten plug comes in direct contact with the basic solution and causes the tungsten plug to erode and define the air capacitive hole.

The references relied upon by the examiner are:

Turner et al. (Turner) 5,281,320 Jan. 25, 1994
Stanley Wolf et al. (Wolf), "Silicon Processing for the VLSI Era," (Lattice Press, 1986)

GROUND OF REJECTION

Claims 10-24 stand rejected under 35 U.S.C. § 103 as unpatentable over Turner in view of Wolf.

We reverse.

DISCUSSION

The invention is directed to a system for making air capacitive holes in a pressure transducer structure. Appeal Brief, Paper No. 15, received June 20, 2000, page 1, Summary of the Invention. According to appellants, "the process of integrating pressure transducers into standard CMOS circuitry manufacturing is a task that increases complexity and adds a substantial amount of cost to CMOS fabrication operations." Specification, page 3, lines 9-11. According to appellants, the present invention overcomes the drawbacks of the prior art processes by providing a system for making an air capacitive hole for a pressure transducer structure which may be efficiently made using conventional CMOS manufacturing techniques that avoid introducing additional manufacturing complexities and increased costs. Specification, page 4, lines 2-4.

The examiner found that Turner teaches a system for metallization of semiconductor devices having the features recited in claims 10-24, with the exception of a bath for submersing the pressure transducer structure. Examiner's Answer, Paper No. 16, mailed July 25, 2000, page 3. The examiner notes

that Wolf discloses a bath for submersing semiconductor devices or articles into a solution for wet processing. *Id.* According to the examiner, Wolf's bath is capable of submersing a semiconductor device having tungsten into a basic solution to erode tungsten and form a via hole. *Id.* The examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified Turner using the apparatus/system of Wolf in order to accomplish a multi-stage fabrication. *Id.* The examiner maintains that the motivation to have combined these prior art teachings is "the knowledge generally available to one of ordinary skill in the art." *Id.*, page 6.

Appellants' principal argument in traversing the examiner's rejection is that there is no teaching or suggestion in either Turner or Wolf which would have motivated one of ordinary skill in the art to have combined their teachings to arrive at the claimed invention. See Appeal Brief, page 8. In support of their contention, appellants identify several differences between the teachings of Turner and Wolf. Most

notably, appellants point out that Turner does not teach a processing station for submersing a semiconductor device in a bath having a basic solution.¹ *Id.*, page 6. Although Wolf generally discloses techniques for submersing metals into baths for the purpose of performing wet etchbacks, appellants note that Wolf does not teach or suggest submersing a semiconductor device into a basic solution for the purpose of eroding tungsten to form a via hole. *Id.*

A proper analysis under § 103 requires, *inter alia*, that the examiner consider two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device or carry out the claimed process, and (2) whether the prior art would have also revealed that in so making or carrying out, one of ordinary skill would have a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

¹Claims 10 and 21 are the sole independent claims. Claim 10 requires "a bath for submersing the pressure transducer structure into a basic solution" and claim 21 requires "means for submerging the pressure transducer structure in a basic solution".

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Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicants' disclosure. "[T]he factual inquiry whether to combine references must be thorough and searching." **McGinley v. Franklin Sports, Inc.**, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001).

In the present case, we are in agreement with appellants that the examiner has simply failed to identify the requisite teaching or suggestion in the prior art which would have motivated one of ordinary skill in the art to have combined the teachings of Turner and Wolf to achieve the claimed invention. **See In re Zurko**, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001) (It is impermissible to reach conclusions based on what the examiner believes to be basic knowledge or common sense. The examiner must identify concrete evidence in the record in support of his findings.) Thus, the examiner has failed to establish a **prima facie** case of obviousness. See Appeal Brief, page 7.

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The rejection of claims 10-24 is reversed.

REVERSED

WILLIAM F. SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
ROMULO H. DELMENDO)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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LINDA R. POTEATE)	
Administrative Patent Judge)	

LRP:psb

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