

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES  
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Ex parte ZORAN KRIVOKAPIC  
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Appeal No. 1998-2649  
Application No. 08/616,990  
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ON BRIEF  
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Before KIMLIN, GARRIS, and PAWLIKOWSKI, Administrative Patent Judges.

GARRIS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the final rejection of claims 1-29, which are all of the claims in the application.

The subject matter on appeal relates to a plasma sputtering apparatus and method which includes a first and second wafer support located at the lower and upper ends respectively of a chamber, a coil of conductive material

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disposed between these supports, and a target support positioned between the vertical side surface of the chamber and the coil. This appealed subject matter is adequately illustrated by independent claim 1 which reads as follows:

1. A plasma sputtering apparatus comprising:

a chamber having an upper end, a lower end, and a vertical side surface connecting the upper and lower ends;

a first wafer support located at the lower end of the chamber;

a second wafer support located at the upper end of the chamber;

a coil of conductive material disposed between the first and second wafer supports;

a target support positioned between the vertical side surface and the coil;

means for applying radio frequency energy to the coil; and

means for applying a radio frequency or direct current bias to each wafer support.

The references set forth below are relied upon by the examiner as evidence of obviousness:

|  |           |          |
|--|-----------|----------|
| Barnes et al. (Barnes)<br>1993   | 5,178,739 | Jan. 12, |
| Mosely et al. (Mosely)<br>1995   | 5,431,799 | Jul. 11, |
| Canon Co., Ltd. (Canon)<br>1989<br>(published Japanese Patent Application) | 64-055379 | Mar. 02, |

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Claims 1-11 and 13-28 stand rejected under 35 U.S.C. § 103 as being unpatentable over the Canon reference in view of Barnes, and claims 12 and 29 stand correspondingly rejected over these references and further in view of Mosely.

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We refer to the brief and reply brief and to the answer for a complete exposition of the opposing viewpoints expressed by the appellant and by the examiner concerning the above-noted rejections.

OPINION

We cannot sustain these rejections for the reasons which follow.

On page 7 of the answer, the examiner expresses his obviousness conclusion in the following manner:

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have placed a substrate on a holder opposite another substrate on a holder between targets supplied with sputtering power as taught by Canon and to have provided an apparatus with a cylindrical target, rf coil, biased substrate for depositing in high aspect ratio holes of a semiconductor as taught by Barnes et al. because it is desired to deposit films over a large area and in aspect ratio holes.

We share the appellant's basic position that the applied prior art contains no teaching or suggestion for combining the apparatus of Canon with an RF coil of the type taught by Barnes in order to thereby result in an apparatus and a method of the type defined by the independent claims on appeal. Concerning this matter, page 10 of the answer sets forth the

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examiner's following viewpoint to the contrary:

In response to the argument that one of ordinary skill in the art would not have been realistically led to dramatically reconstruct Canon's apparatus by providing an RF conductive coil, cylindrical target, segmented target, and biased substrate, simply because such features are employed by Barnes et al. for an entirely different objective (i.e., in Barnes the objective is to deposit in high aspect ratio openings and in Canon the objective is deposit over large areas), it is argued that Canon and Barnes et al. objective are [sic, is] the same. Specifically, Canon suggest filling in fine contact pores (i.e., aspect ratio holes) (See Canon translation page 12) and Barnes et al. suggest filling in high aspect ratio holes (see Barnes et al. Column 4[, ] lines 62-64).

Unlike the examiner, we do not regard the page 12 disclosure of Canon that "fine contact pores can be fattened" as suggesting the filling of high aspect ratio holes of the type taught by Barnes (and the appellant). Indeed, we perceive merit in the appellant's position that this disclosure of Barnes is ambiguous. From our perspective, the examiner's interpretation of Canon's aforementioned disclosure is based upon conjecture, speculation or assumption, and it is well settled that a Section 103 rejection must rest on a factual basis rather than conjecture, speculation or assumption. In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968).

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