

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 12

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHUNG-KUANG LEE

Appeal No. 1998-1102
Application No. 08/761,883

ON BRIEF

Before HAIRSTON, FLEMING, and RUGGIERO, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 15-22, all of the claims pending in the present application.

The claimed invention relates to a polysilicon resistor structure in which first and second insulating layers provide

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a barrier to the deterioration of the polysilicon resistor. The first insulating layer, formed of a glasseous material, is formed directly upon the surface of a semiconductor substrate, while the second insulating layer is formed directly upon the first insulating layer and over the polysilicon resistor. Appellant indicates at page 5 of the specification that the second insulating layer is formed from a silicon oxide material deposited using a Plasma Enhanced Chemical Vapor Deposition (PECVD) process using silane as the silicon source material.

Claims 15 is illustrative of the invention and reads as follows:

15. A polysilicon resistor structure for use within integrated circuits comprising:

a first insulating layer formed directly upon a semiconductor substrate, the first insulating layer being formed from a glasseous material;

a polysilicon resistor in contact with the first insulating layer;

a second insulating layer formed upon the first insulating layer and above the polysilicon resistor, the second insulating layer being formed from a silicon oxide material deposited through a Plasma Enhanced Chemical Vapor Deposition process employing silane as the silicon source material.

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The Examiner relies on the following prior art:

Manning et al. (Manning)	5,232,865	Aug. 03, 1993
Cederbaum et al. (Cedarbaum)	5,381,046	Jan. 10, 1995
McArthur	5,554,884	Sep. 10, 1996 (Filed Jan. 27, 1995)

Claims 15-22 stand finally rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Cederbaum and Manning. In a separate rejection, claim 17 stands finally rejected under 35 U.S.C. § 103 as being unpatentable over the combination of Cederbaum, Manning, and McArthur.

Rather than reiterate the arguments of Appellant and the Examiner, reference is made to the Brief and Answer for the respective details.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the Examiner and the evidence of obviousness relied upon by the Examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, Appellant's arguments set forth in the Brief along with the Examiner's

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rationale in support of the rejections and arguments in rebuttal set forth in the Examiner's Answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 15-22. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the Examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive

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at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the Examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

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With respect to independent claim 15, the Examiner proposes to modify the semiconductor device structure of Cederbaum which describes a polysilicon resistor in contact with a glasseous material first insulating layer upon which a second insulating layer is formed. As recognized by the Examiner, the glasseous material insulating layer in Cederbaum is not directly formed over the substrate, nor is it in contact with the polysilicon resistor, as required by appealed claim 15. To address this deficiency, the Examiner turns to the semiconductor structure disclosed by Manning which, as asserted by the Examiner, describes differing embodiments in which a glass material insulator either contacts or is isolated from the device substrate. In the Examiner's view (Answer, page 4):

It would have been obvious to a skilled artisan to combine the teachings of Manning with that of Cederbaum in [sic] especially since Manning teaches several embodiments where the BPSG may either directly contact or not directly contact the substrate. This is viewed as within design considerations of any skilled artisan.

In response, Appellants assert that the Examiner has failed to establish a prima facie case of obviousness since no motivation has been suggested for the Examiner's proposed

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combination of Cederbaum and Manning. We agree. In our view, the Examiner's reliance on design considerations as a basis for the proposed combination of Cederbaum and Manning is not well founded. Appellants' disclosed intended function of protecting the polysilicon resistor from deterioration due to infiltration of mobile contaminants can only be achieved through the particular insulator stacking arrangement recited in appealed claim 15. In our opinion, the Examiner's finding of the particular claimed insulator stacking arrangement to be merely a design consideration is totally devoid of any support on the record.

We further note that we do not disagree with the Examiner's interpretation of the disclosure of Manning. This reference, and we presume countless uncited others, provides a teaching of insulating layers in contacting or non-contacting relationship with a semiconductor device substrate. Notwithstanding this prior art disclosure, however, we find no convincing reasoning supplied by the Examiner as to how and why the skilled artisan would apply such stacked insulator teachings to the semiconductor device structure of Cederbaum. The mere fact that the prior art may be modified in the manner

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suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 972 F. 2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992). We are left to speculate why the skilled artisan would turn to the teachings of Manning in which, in both described embodiments, the glass insulating layer contacts the polysilicon resistor, in order to modify the structure of Cederbaum which, rather than having insulator contact with a polysilicon resistor, provides a barrier layer therebetween. The only reason we can discern is improper hindsight reconstruction of Appellant's claimed invention. Accordingly, we do not sustain the Examiner's obviousness rejection of claims 15-22 based on the combination of Cederbaum and Manning.

Lastly, we have considered the McArthur reference added by the Examiner to the combination of Cederbaum and Manning in a separate 35 U.S.C. § 103 rejection of dependent claim 17. It is apparent from the Examiner's analysis (Answer, page 5), however, that McArthur is relied upon solely to address the specific recited boron and phosphorus weight limitations. We find nothing, however, in the disclosure of McArthur which

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would overcome the innate deficiencies of Cederbaum and Manning discussed supra.

In conclusion, since the Examiner has not established a prima facie case of obviousness, the 35 U.S.C. § 103 rejection of independent claim 15 and claims 16-22 dependent thereon, cannot be sustained. Therefore, the decision of the Examiner rejecting claims 15-22 is reversed.

REVERSED

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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)	
)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
JOSEPH F. RUGGIERO)	

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Administrative Patent Judge)

lp

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GEORGE O SAILE
20 MCINTOSH DRIVE
POUGHKEEPSIE NY 12603

Leticia

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APJ RUGGIERO

APJ FLEMING

APJ HAIRSTON

DECISION: REVERSED
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s):

Prepared: June 9, 2001

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
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