

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

**UNITED STATES PATENT AND TRADEMARK OFFICE**

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

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Ex parte STEVEN TEIG and AKIRA FUJIMURA

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Appeal No. 2006-2804  
Application No. 10/335,246

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ON BRIEF

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Before KRASS, BARRY, and SAADAT, Administrative Patent Judges.  
KRASS, Administrative Patent Judge.

This is a decision on appeal from the final rejection of  
claims 1-17.

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The invention pertains to semiconductor designs and layouts. In particular, it involves the creation of efficient vias between metal layers in such designs and layouts.

Representative independent claim 1 is reproduced as follows:

1. A method of preparing a semiconductor mask, said method comprising:

designing an integrated circuit layout containing non rectilinearly shaped vias;

after designing said integrated circuit layout containing non rectilinearly shaped vias, replacing said non rectilinearly shaped vias in said integrated circuit layout with replacement rectilinearly shaped vias, in order to simplify producing said semiconductor mask; and

producing said semiconductor mask from said integrated circuit layout with said replacement rectilinearly shaped vias.

The examiner relies on the following references:

Igarashi et al. (Igarashi)	6,763,508	July 13, 2004 (filed Apr. 12, 2002)
Li et al. (Li)	6,769,099	July 27, 2004 (filed Apr. 12, 2002)

Claims 1-17 stand rejected under 35 U.S.C. § 103 as unpatentable over Igarashi in view of Li.

Reference is made to the briefs and answer for the respective positions of appellants and the examiner.

OPINION

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, 148 USPQ 459, 467 (1966). The examiner must articulate reasons for the examiner's decision. In re Lee, 277 F.3d 1338, 1342, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002). In particular, the examiner must show that there is a teaching, motivation, or suggestion of a motivation to combine references relied on as evidence of obviousness. Id. at 1343. The examiner cannot simply reach conclusions based on the examiner's own understanding or experience - or on his or her assessment of what would be basic knowledge or common sense. Rather, the examiner must point to some concrete evidence in the record in support of these findings. In re Zurko, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001). Thus the examiner must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by

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which the findings are deemed to support the examiner's conclusion. However, a suggestion, teaching, or motivation to combine the relevant prior art teachings does not have to be found explicitly in the prior art, as the teaching, motivation, or suggestion may be implicit from the prior art as a whole, rather than expressly stated in the references. The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art. In re Kahn, 441, F.3d 977, 987-88, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006) citing In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000). See also In re Thrift, 298 F.3d 1357, 1363, 63 USPQ2d 2002, 2008 (Fed. Cir. 2002). 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). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1040, 228 USPQ 685, 687 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1051, 189 USPQ 143, 146-147 (CCPA 1976). Only those

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arguments actually made by appellant have been considered in this decision. Arguments which appellant could have made but chose not to make in the brief have not been considered and are deemed to be waived [see 37 CFR § 41.37(c)(1)(vii)(2004)].

After careful review of the evidence before us, we conclude that the examiner has failed to establish a prima facie case of obviousness.

Each of independent claims 1 and 6 requires "replacing said non rectilinearly shaped vias...with replacement rectilinearly shaped vias." Independent claim 10 requires "replacing said non rectilinearly shaped via design with said test rectilinearly shaped via design..." Thus, all of the claims require, at least, a replacement of a non rectilinearly shaped via with a rectilinearly shaped via.

Neither of the applied references teaches or suggests this limitation.

The examiner admits as such, at page 4 of the answer. The examiner relies on Li for this claim limitation, pointing to column 6, line 45, through column 7, line 62, of the reference for a teaching of allowing only rectilinear vias to remain within an IC design layout. However, even assuming the examiner is correct regarding Li's teaching in this regard, the allowance of only rectilinear vias in no way suggests that there has been a "replacement" of non rectilinear vias with rectilinear vias, as

claimed. It is simply unwarranted to assume, as the examiner does, at page 8 of the answer, that any teaching of Li to use only rectangular and square vias, is a clear suggestion of replacing non rectilinearly shaped vias with rectilinearly shaped vias. The examiner reasons that "without such replacement it is impossible to keep only rectangular vias in the IC layout..." (answer-page 8). If Li simply ignores or does not use vias which are not rectilinearly shaped, leaving only rectilinearly shaped vias, this is not a "replacement" of non-rectilinearly shaped vias with rectilinearly shaped vias, as claimed, but it would still leave Li's design with only rectilinearly shaped vias. Thus, the examiner's rationale, in our view, is flawed.

The examiner's rationale for making the combination is also suspect. The examiner asserts that by replacing non rectilinear vias with rectilinear vias, "it could simplify producing the producing of semiconductor mask" [sic, answer-page 5]. But appellants have asserted that the only teaching of this "simplification" comes from appellants' own specification and the examiner has not pointed to anything in the applied references to dispute this. In fact, the examiner's rationale does seem to be based on impermissible hindsight.

While the examiner presents exhaustive arguments in an answer in excess of thirty pages, the examiner never once points to any specific teaching in either of the applied references

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indicative of a replacement of non rectilinearly shaped vias with rectilinearly shaped vias, as explicitly set forth in each of the instant claims on appeal. We are unpersuaded by the examiner's voluminous arguments as to why such replacement would have been obvious in the absence of any suggestion by the applied references to make that modification.

Accordingly, the examiner's decision rejecting claims 1-17 under 35 U.S.C. § 103 is reversed.

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REVERSED

ERROL A. KRASS	)	
Administrative Patent Judge	)	
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	)	
	)	BOARD OF PATENT
LANCE LEONARD BARRY	)	
Administrative Patent Judge	)	APPEALS AND
	)	
	)	INTERFERENCES
	)	
MAHSHID D. SAADAT	)	
Administrative Patent Judge	)	

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