

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. 27

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte RICHARD C. BLISH II and MOHAMMAD MASSOODI

Appeal No. 2004-0621
Application No. 09/193,193

ON BRIEF

Before GARRIS, WALTZ, and JEFFREY T. SMITH, Administrative Patent Judges.

WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the primary examiner's final rejection of claims 8 through 15. Claims 1 through 7, which are the only other claims in this application, stand withdrawn from further consideration as directed to a non-elected invention (Brief, page 2). We have jurisdiction pursuant to 35 U.S.C. § 134.

According to appellants, the invention is directed to a semiconductor device that is at least partially deprocessed, where the device includes at least one conductive line, an insulator surrounding a portion of the conductive line, the conductive line

Appeal No. 2004-0621
Application No. 09/193,193

includes a conductive layer, and the insulator is separated from this conductive layer by a gap (Brief, page 3). Appellants state that this gap is formed by removal of a portion of a barrier layer disposed between the conductive layer and the insulator, while the conductive line is physically detached from the insulator and thus is capable of being removed by lifting off the conductive layer (*id.*). Representative independent claim 8 is reproduced below:

8. A semiconductor device that is at least partially deprocessed, the semiconductor device comprising:

at least one conductive line including a conductive layer; and

an insulator surrounding a portion of the conductive line, the insulator being separated from the conductive layer by a gap, the gap being formed by removal of a portion of a barrier layer disposed between the conductive layer and the insulator, the portion of the barrier layer being removed by exposing a second portion of the barrier layer by removing a portion of the insulator; and

etching the portion barrier layer after the portion of the insulator is removed; and

wherein the conductive line is physically detached from the insulator and is capable of being removed by lifting off the conductive layer.

The examiner relies on Grill et al. (Grill), U.S. Patent No. 5,869,880, issued on Feb. 9, 1999 (filed Mar. 13, 1996), as the sole evidentiary basis for the rejections on appeal (Answer, page 3). Claims 8 and 10-15 stand rejected under 35 U.S.C. § 102(e) as anticipated by Grill (Answer, page 4). Claim 9 stands rejected

Appeal No. 2004-0621
Application No. 09/193,193

under 35 U.S.C. § 103(a) as unpatentable over Grill (Answer, page 5). We reverse the rejections on appeal essentially for the reasons stated in the Brief and those reasons set forth below.

OPINION

The examiner finds that Grill discloses a semiconductor device comprising at least one conductive line 7 including a conductive layer, an insulator 4 surrounding a portion of the conductive line, where the insulator 4 is separated from the conductive layer by a gap, thereby the conductive line is physically detached from the insulator 4 and is capable of being removed by lifting off the conductive layer (Answer, page 4, citing Fig. 7e and col. 3, ll. 38-42). The examiner finds that layer 2 of Grill is the substrate rather than a dielectric, with the dielectric layer in Fig. 7e represented by reference numeral 4 rather than 2 (Answer, page 7). The gap formation, removing and etching limitations of claim 8 on appeal have been considered by the examiner as "process limitations" that do not affect the product as claimed (Answer, page 4). Since the examiner has found that the conductive line 7 is physically detached from the insulator 4, the examiner relies upon appellants' statement that such a conductive line would be capable of being removed by lifting off, and therefore all the

Appeal No. 2004-0621
Application No. 09/193,193

limitations of claim 8 on appeal have been disclosed by Grill (Answer, page 6). We disagree.

The examiner must apply to the language of the claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account any enlightenment by way of definition or otherwise found in the specification. See *In re Morris*, 127 F.3d 1048, 1054, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). Accordingly, we agree with the examiner's analysis that the "insulator" recited in claim 8 on appeal may be construed as the dielectric line 4 of Grill (see appellants' specification, page 3, ll. 16-17). Similarly, we determine that the term "physically detached" as recited in claim 8 on appeal should be construed as meaning that "physical contact between the conductive layers ... and the barrier layers ... is broken," thus allowing the conductive layers to be lifted off (specification, page 5, l. 22-page 6, l. 7).

As correctly argued by appellants, the examiner has not indicated that Grill discloses or suggests that the portion of the substrate 2 under the conductive line 7 is removed in any manner (Brief, page 6). Therefore the examiner has not shown that the conductive line 7 is not attached to the underlying substrate (*id.*). Accordingly, although the examiner has shown that the

conductive line 7 is physically detached from the insulator (dielectric) 4 in Grill, we determine that the examiner has failed to establish that the conductive line 7 of Grill "is capable of being removed by lifting off the conductive layer" as required by claim 8 on appeal (compare appellants' Fig. 4B with Fig. 7e of Grill). Furthermore, as correctly argued by appellants (Brief, page 7), the semiconductor device of Grill would not function if there was complete physical detachment and removal of the conductive line 7. The examiner's argument that Fig. 7e of Grill is merely an intermediate product (Answer, page 7) is not persuasive since Grill does not disclose or suggest that this intermediate product was physically detached from the underlying substrate.

Additionally, we note that claim 8 on appeal recites that the gap is "formed by removal of a *portion* of a barrier layer" (italics added). Therefore, this process limitation does further limit the product as claimed, since it follows that at least some portion of the barrier layer must remain as part of the semiconductor device, located between the conductive layer and the insulator (see appellants' Fig. 4B). The examiner has not cited any disclosure in Grill of a barrier layer.

Appeal No. 2004-0621
Application No. 09/193,193

For the foregoing reasons, we determine that the examiner has not established a *prima facie* case of anticipation in view of Grill. See *In re King*, 801 F.2d 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1986) (anticipation requires that the prior art reference disclose, either expressly or under the principles of inherency, every limitation of the claim). The rejection of claim 9 is also based on Grill in combination with the examiner's "official notice" (Answer, pages 5-6). The deficiencies discussed above are not remedied by this "official notice." Accordingly, both of the rejections on appeal are reversed.

Appeal No. 2004-0621
Application No. 09/193,193

The decision of the examiner is reversed.

REVERSED

BRADLEY R. GARRIS)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
THOMAS A. WALTZ)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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JEFFREY T. SMITH)	
Administrative Patent Judge)	

TAW/jrg

Appeal No. 2004-0621
Application No. 09/193,193

Kelly K. Kordzik Winstead
Sechrest & Minick PC
PO BOX 50784
1201 Main Street
Dallas, TX 75250-0784