

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 HUNG-SHENG CHEN and
YOWJUAG W. LIU

Appeal No. 2001-2212
Application No. 09/019,409

ON BRIEF

Before JERRY SMITH, RUGGIERO, and DIXON, Administrative Patent Judges.

RUGGIERO, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal from the final rejection of claims 1-3, 6, 7, and 12-20. Claims 4 and 5 have been canceled. Claims 8-11 stand withdrawn from consideration as being directed to a non-elected invention.

The claimed invention relates to a process for making a flash memory core in which at least one tunnel oxide layer is initially

established on a silicon substrate. Plural stacks are formed on the at least one tunnel oxide layer with each stack including a first polysilicon layer. After forming an interpoly dielectric layer on at least some of the stacks, a second polysilicon layer is deposited on at least a portion of the interpoly dielectric layer to establish memory cell control gates. After the establishment of the control gates, isolation trenches are formed in the substrate.

Claim 1 is illustrative of the invention and reads as follows:

1. A process for making a flash memory core having source and drain regions, comprising the step of:

providing at least one silicon substrate;

establishing at least one tunnel oxide layer on the substrate;

establishing plural stacks on the tunnel oxide layer, each stack including a first polysilicon layer;

implanting channel stop dopant in the silicon substrate;

depositing a field oxide material on at least portions of the silicon substrate over the channel stop dopant;

forming at least one interpoly dielectric layer on at least some of the stacks;

depositing at least one second polysilicon layer on at least a portion of the interpoly dielectric layer, such that plural memory cell control gates are established; and

after the step of establishing plural memory cell control gates, establishing isolation trenches in the substrate.

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The Examiner relies on the following prior art:

Esquivel	4,698,900	Oct. 13, 1987
Wada et al. (Wada)	5,087,584	Feb. 11, 1992
Gill et al. (Gill)	5,110,753	May 05, 1992

Claims 1-3, 6, 7, and 12-20, all of the appealed claims, stand finally rejected under 35 U.S.C. § 103(a). As evidence of obviousness, the Examiner offers Esquivel in view of Gill with respect to claims 1-3 and 12-18, and adds Wada to the basic combination with respect to claims 6, 7, 19, and 20.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Brief (Paper No. 8), the final Office action mailed December 22, 1999 (Paper No. 6), and Answer (Paper No. 10) for the respective details.

OPINION

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

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particular art would have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 1-3, 6, 7, and 12-20. Accordingly, we affirm.

Appellants have nominally indicated (Brief, page 5) that the appealed claims do not stand or fall together and have made several arguments in response to the Examiner's obviousness rejection. We will address these arguments accordingly and will consider the appealed claims separately only to the extent that separate arguments are of record in this appeal. Any dependent claim not argued separately in the Brief will stand or fall with its base claim. Note In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991, 217 USPQ 1, 3 (Fed. Cir. 1983).

As a general proposition in an appeal involving a rejection under 35 U.S.C. § 103, an Examiner is under a burden to make out a prima facie case of obviousness. If that burden is met, the burden of going forward then shifts to Appellants 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 In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745

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F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

With respect to claims 1, 12, and 18, separately argued by Appellants, the Examiner, as the basis for the obviousness rejection, proposes to modify the memory array fabrication method disclosure of Esquivel. According to the Examiner (final Office action, page 3), Esquivel discloses the claimed invention except for a teaching of ". . . the implanting of the channel stop dopant prior to depositing the filed [sic, field] oxide material." To address this deficiency, the Examiner turns to Gill which describes the implanting of a channel stop dopant prior to formation of a field oxide. In the Examiner's analysis (id.), the skilled artisan would have recognized from the teachings of Gill the necessity of providing a channel stop dopant prior to forming a field oxide layer and would have been motivated and found it obvious to do so in Esquivel.

After reviewing the Examiner's analysis, it is our view that the Examiner has clearly pointed out the teachings of the Esquivel and Gill references, has reasonably indicated the perceived differences between this applied prior art and the claimed invention, and has provided reasons as to how and why this prior art would have been modified and/or combined to arrive at the

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claimed invention. In our view, the Examiner's analysis is sufficiently reasonable that we find that the Examiner has at least satisfied the burden of presenting a prima facie case of obviousness. The burden is, therefore, upon Appellants to come forward with evidence or arguments which persuasively rebut the Examiner's prima facie case of obviousness. Arguments which Appellants could have made but elected not to make in the Brief have not been considered in this decision (note 37 CFR § 1.192).

In response, Appellants assert several arguments in support of the contention that the Examiner has failed to establish a prima facie case of obviousness. Initially, Appellants contend (Brief, pages 6-10) that, in contrast to the claimed invention, Esquivel lacks the formation of a tunnel oxide layer and the use of dry etching to form plural stacks. Appellants further assert that the Examiner has skipped in a zig-zag manner from section to section in Esquivel to establish correspondence with the claimed method steps and has not shown that Esquivel's fabrication steps occur in the sequence presented in the appealed claims.

After reviewing the Esquivel and Gill references in light of the arguments of record, we do not find Appellants' arguments to be persuasive. As pointed out by the Examiner (Answer, page 5), Esquivel provides a clear suggestion (column 6, lines 38-45) of the

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use of a dry etch technique for forming stacks. We also agree with the Examiner that, while Esquivel might not explicitly describe layer 16 as a "tunnel oxide layer," the combination of Esquivel with Gill would include such a layer since Gill specifically teaches the use of a tunneling oxide at column 3, lines 34-36.

We also find ourselves in agreement with the Examiner that, in contrast to Appellants' contention, the method steps listed in appealed claim 1 have no requirement that they be performed in any specific sequence.¹ While the flow chart illustration in Appellants' Figure 2 and the accompanying description in the specification describe a specific sequence of processing steps, this is not required by the present claim language. In our view, Appellants' arguments improperly attempt to narrow the scope of the claim by implicitly adding disclosed limitations which have no basis in the claim. See In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997).

We also find to be unpersuasive Appellants' further argument (Brief, page 10) which asserts the deficiencies in the secondary reference to Gill in disclosing the trench isolation feature of the

¹ The concluding step in appealed claim 1 does require the establishment of isolation trenches after formation of control gates; however, this sequence is clearly taught by Esquivel.

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appealed claims. Appellants contend that, unlike the present invention, Gill does not contemplate the use of isolation trenches. It is apparent, however, from the Examiner's line of reasoning expressed in the final Office action that the Gill reference was applied for the limited purpose of providing a teaching of depositing a channel stop dopant before forming a field oxide layer. The Gill reference is used in combination with Esquivel, which provides a clear teaching of forming isolation trenches after the establishment of control gates as set forth in the appealed claims. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. In re Keller, 642 F. 2d 413, 425, 208 USPQ 871, 881 (CCPA 1981); In re Merck & Co., Inc., 800 F. 2d 1091, 1096, 231 USPQ 375, 380 (Fed. Cir. 1986).

In view of the above discussion and the totality of the evidence on the record, it is our opinion that the Examiner has established a prima facie case of obviousness which has not been rebutted by any convincing arguments from Appellants. Accordingly, the Examiner's 35 U.S.C. § 103(a) rejection of claims 1, 12, and 18 is sustained.

Turning to a consideration of dependent claims 2 and 15 discussed by Appellants at page 6 of the Brief, we sustain the

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Examiner's obviousness rejection of these claims as well. Although Appellants have included (Brief pages 13 and 14) illustrations of the structure of their device as opposed to that of Esquivel, we fail to see the relevance of any purported structural difference in relation to the method steps as claimed. Notwithstanding any alleged structural differences provided in the illustrations provided by Appellants, we find a clear discussion in Esquivel of the relationship between the source/drain regions and the trench isolation structure beginning at column 4, line 65 of Esquivel.

Lastly, we also sustain the Examiner's 35 U.S.C. § 103(a) rejection of dependent claims 3, 6, 7, 13, 14, 16, 17, 19, and 20. With respect to claims 6, 7, 19, and 20, Appellants (Brief, page 11) have chosen to let these claims fall with their base independent claims 1 and 12 by relying on arguments made with respect to claims 1 and 12, arguments which we found to be unpersuasive as discussed supra. Further, although Appellants have nominally indicated that dependent claims 3, 13, 14, 16, and 17 do not stand or fall together (Brief, page 5)), no separate arguments for patentability of these claims are presented in the Brief. Rather, the extent of Appellants' arguments (Brief, pages 11 and 12) is to simply repeat what is recited in each of the claims. Simply pointing out what a claim requires with no attempt to point

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out how the claims patentably distinguish over the prior art does not comply with 37 CFR § 1.192(c)(8) and does not amount to a separate argument for patentability. In re Nielson, 816 F.2d 1567, 1572, 2 USPQ2d 1525,1528 (Fed. Cir. 1987).

In conclusion, we have sustained the Examiner's 35 U.S.C. § 103(a) rejection of each of the claims on appeal. Therefore, the decision of the Examiner to reject claims 1-3, 6, 7, and 12-20 is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

JERRY SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
JOSEPH F. RUGGIERO)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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