

Appeal No. 2000-0937  
Application 08/959,620

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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

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Appeal No. 2000-0937  
Application 08/959,620

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ON BRIEF

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Before JERRY SMITH, BARRETT, and SAADAT, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 1-9 and 23-32, which constitute all the claims remaining in the application.

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The disclosed invention pertains to a microelectronic structure. More particularly, the invention is directed to the structure of a capacitor used in a memory cell of a semiconductor memory.

Representative claim 1 is reproduced as follows:

1. A microelectronic structure comprising:  
a container formed in a substrate, the container having sides and a bottom and the substrate having an upper surface; and  
a layer of conductive material conformally disposed on the sides and bottom of the container, the layer of conductive material on the sides of the container having all edges recessed slightly below the upper surface of the substrate.

The examiner relies on the following reference:

Sudo et al. (Sudo)                      5,555,520                      Sep. 10, 1996

Claims 1-9 and 23-32 stand rejected under 35 U.S.C.  
§ 102(e) as being anticipated by the disclosure of Sudo.

Rather than repeat the arguments of appellant or the examiner, we make reference to the briefs and the answer for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejection advanced by the examiner and the evidence of anticipation relied upon by the examiner as support for the rejection. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellant's

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arguments set forth in the briefs 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 disclosure of Sudo does fully meet the invention as recited in claims 1-9. We reach the opposite conclusion with respect to claims 23-32. Accordingly, we affirm-in-part.

Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every element of a claimed invention as well as disclosing structure which is capable of performing the recited functional limitations. RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir.); cert. dismissed, 468 U.S. 1228 (1984); W.L. Gore and Associates, Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

The examiner indicates how he reads the claimed invention on the disclosure of Sudo [answer, pages 3-5]. With respect to claims 1-9, which stand or fall together [brief, page 4], appellant argues that Sudo does not teach that the edges of the layer of conductive material on the sides of the container are recessed slightly below the upper surface of the substrate.

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According to appellant, the polysilicon layer 108 in Sudo is disposed substantially below the surface of substrate 101 to make room for the monosilicon plug 111 [brief, pages 7-10]. The examiner responds that the lower electrode in Sudo is recessed only slightly below the surface of the substrate just as in appellant's invention [answer, pages 5-7]. Appellant responds that based on the dimensions disclosed by Sudo, the lower electrode is substantially recessed when compared to the slight recess of the claimed invention [reply brief].

Based on the record before us, we will sustain the rejection of claims 1-9. The concept of the lower electrode of the capacitor being recessed slightly below the surface of the substrate appears nowhere in appellant's specification. This fact would suggest that the invention was not based on the particular amount of recess of the lower electrode. In fact, the specification makes only one reference to the amount of recess. Specifically, the specification states that "[t]he amount that the polysilicon within the containers 52a and 52b is recessed should be carefully controlled because capacitance will be lost as the first conductive layers or plates 54a and 54b become smaller" [page 14]. Thus, the amount of recess would appear to be only a function of the lower conductive layer being able to

operate as a storage device for a memory cell in combination with the upper conductive layer. The capacitor of Sudo is clearly capable of operating as a storage device for a memory cell. Therefore, we find that the lower conductive layer is not recessed more than slightly because the conductive layer is still capable of operating as the storage device of a memory cell. In other words, since appellant's specification offers no guidance as to what "recessed slightly" means, and since the structure of Sudo performs in the manner of the claimed structure, we agree with the examiner that the edges of polysilicon layer 108 are recessed slightly below the upper surface of the substrate as claimed.

With respect to claims 23-27 and claims 28-32, which respectively stand or fall together as second and third groups, appellant notes that these claims do not recite the feature of the edges of the conductive material being slightly below the upper surface of the substrate. Instead, claims 23-27 use the transitional phrase "consisting of" and claims 28-32 use the transitional phrase "consisting essentially of." Appellant argues that these claims distinguish over Sudo because the Sudo capacitor must include a first and a second upper capacitor electrode whereas claims 23-32 effectively exclude such an

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additional element. The examiner does not address this particular argument in the answer as noted by appellant in the reply brief.

We will not sustain the rejection of claims 23-32 because the examiner has failed to establish a prima facie case of anticipation. The first step in analyzing the propriety of a rejection based on prior art is to ascertain the scope of the claims. As noted above, claims 23-27 recite a device "consisting of" a plurality of components while claims 28-32 recite a device "consisting essentially of" a plurality of components. The phrase "consisting of" means that no other components can be present in the prior art structure. The phrase "consisting essentially of" means that no other components can be present in the prior art structure unless they are not material to the operation of the prior art structure. The examiner has not considered the scope of either of these phrases.

Sudo has the elements recited in claims 23-32, but the capacitor in Sudo also appears to require a second upper electrode of the capacitor made from monocrystalline silicon. Appellant argues that this additional element in the Sudo capacitor precludes Sudo from meeting the transitional phrases "consisting of" and "consisting essentially of" as used in claims

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23-32. Since the examiner has not addressed the scope of the claimed invention required by these transitional phrases, we find that the examiner has failed to demonstrate that the disclosure of Sudo fully meets the invention set forth in claims 23-32.

In summary, we have sustained the examiner's rejection with respect to claims 1-9, but we have not sustained this rejection with respect to claims 23-32. Therefore, the decision of the examiner rejecting claims 1-9 and 23-32 is affirmed-in-part.

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

AFFIRMED-IN-PART

JERRY SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
LEE E. BARRETT	)	
Administrative Patent Judge	)	APPEALS AND
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	)	INTERFERENCES
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