Paper No. 11

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ADITI BANERJEE, RICK L. WISE and DARIUS CRENSHAW

Appeal No. 2001-0570
Application No. 09/049,591

ON BRIEF

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

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of the single claim, claim 1, pending in the application.

Claim 1 is reproduced as follows:

1. A capacitor, comprising:

(a) a first electrode, said first electrode including a surface of rugged polysilicon with a maximum thickness of less than about 30 nm;

(b) a dielectric on said surface; and

(c) a second electrode on said dielectric.

The examiner relies on the following reference:

Tatsumi et al. [Tatsumi] 5,385,863 Jan. 31, 1995

Claim 1 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

Claim 1 stands further rejected under 35 U.S.C. § 103 as unpatentable over Tatsumi.

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

OPINION

Turning, first, to the rejection of claim 1 under 35 U.S.C. § 112, second paragraph, the examiner contends that the claim is indefinite because the language "maximum thickness of less than about" is alleged to be confusing. The examiner suggests, instead, "maximum thickness of about."

The inquiry under 35 U.S.C. § 112, second paragraph, is whether the claims do, in fact, set out and circumscribe a particular area with a reasonable degree of precision and particularity. It is here where the definiteness of the language employed must be

analyzed–not in a vacuum, but always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary skill in the pertinent art. In re Moore, 439 F2d 1232, 1235, 169 USPQ 236, 238 (CCPA 1971).

The examiner's suggestion would appear to limit the claims to a maximum thickness of about 30 nm, whereas the claim language, as written, seeks to protect maximum thicknesses of not only about 30 nm but also thicknesses less than this amount. Absent a showing in the prior art that appellants are not entitled to this broader scope of coverage, the examiner may not arbitrarily try to limit appellants' claim scope.

As far as the instant claim language itself is concerned, we find nothing indefinite in calling for a maximum thickness "of less than about." Clearly, it is the "about" language which bothers the examiner. However, this is acceptable language in patent claims, recognizing that, sometimes, exact precision cannot be maintained in practical cases and so, in the instant case, the claim seeks protection on maximum thicknesses of less than 30 nm, or thicknesses which can be reasonably construed to be essentially 30 nm, give or take small fractions of a nanometer or reasonable tolerance.

Our dissenting colleague indicates that he finds the claim language indefinite since the specification uses the term without clarification and there is no indication as to

what range of specific thickness is covered by the term "about." It is our view that the term "about" may make the claim a bit broader in scope but breadth should not be equated with indefiniteness. See In re Miller, 441 F.2d 689, 693, 169 USPQ 597, 600 (CCPA 1971). We find it curious that the dissent finds the claim language indefinite, yet the claimed invention is understood well enough to apply prior art against the claim. This appears, to us, to be inconsistent. If certain claim language is not understood, then any attempt to apply art against that claim can only be based on speculation. Rejections of claims over prior art should not be based on speculation as to the meaning of terms employed and assumptions as to the scope of the claims. In re Steele, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1962).

Accordingly, since we do not find the instant claim language indefinite, we will not sustain the rejection of claim 1 under 35 U.S.C. § 112, second paragraph.

With regard to the rejection under 35 U.S.C. § 103, it is the examiner's position that Tatsumi teaches a capacitor having a first electrode including a surface of HSG (rugged polysilicon) with a grain size of about 300 angstroms, pointing to column 7, line 26 and to Figures 4, 6, 8 and 16; a dielectric on the surface; and a second electrode on the dielectric, pointing to Figure 16. The examiner contends that Tatsumi fails to teach the deposition of HSG (rugged polysilicon) with a maximum grain thickness of about 300 angstroms but points to column 7, lines 14-39, of Tatsumi for a teaching of

controlling the grain size and density of HSG. Accordingly, reasons the examiner, it would have been obvious "to experiment and select the reaction temperature, the flow rate and the time to achieve the maximum grain size of HSG (rugged polysilicon) of about 300 angstroms, since it has been held that where the general conditions of a claim are disclosed in the prior art discovering the optimum ranges involves only routine skill in the art..." [answer-page 4].

By definition, 30 nm = 300 angstroms. Accordingly, Tatsumi's disclosure of 300 angstroms as a possible grain size is a disclosure of 30 nm. Appellants agree, admitting that Tatsumi discloses possible grain sizes down to 30 nm [brief-page 3], but submit that at lines 22-24 of column 7, Tatsumi notes that this is the limit where grains become too close together and surface roughness decreases.. Thus, appellants argue that Tatsumi's disclosure appears to say that the limitations recited in instant claim 1 are not achievable by Tatsumi's method of rugged polysilicon formation. We disagree.

It is true that Tatsumi is suggesting that a thickness of 30 nm is about the smallest that can be achieved by his invention, and claim 1 calls for a "maximum" thickness of "less than about 30 nm." However, since the instant claim calls for a "maximum thickness of less than about 30 nm" and the reference discloses a situation where 30 nm is "possible," the prior art does teach a thickness within the range claimed. For example, the claimed "maximum thickness of less than about 30 nm" might include

something less than 30.2 nm, where 30.2 nm is "about 30 nm", and less than 30.2 nm would be 30 nm, which is clearly taught by Tatsumi.

We do take issue with a portion of the examiner's rationale, wherein the examiner suggests that it would have been obvious "to experiment and select the reaction temperature, the flow rate and the time to achieve the maximum grain size of HSG (rugged polysilicon) about 300 angstroms, since it has been held that where the general conditions of a claim are disclosed in the prior art discovering the optimum ranges involves only routine skill in the art..." [answer-page 4]. This rationale suggests that it would have been obvious to "experiment" by selecting various factors such as temperature, flow rate, and time in order to achieve the claimed subject matter. An "obvious to try" rationale is not a legitimate test of patentability within the meaning of 35 U.S.C. § 103. In re Fine, 837 F.2d, 1071, 1075, 5 USPQ2d 1596, 1599 (Fed. Cir. 1988). Also see In re Geiger, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987); In re Goodwin, 576 F.2d 375, 377, 198, 3 USPQ 1 (CCPA 1978).

However, since Tatsumi does disclose a surface with a thickness within the claimed range (even though Tatsumi discloses that the thickness may be as small as 30 nm, a surface having that thickness would have a "maximum thickness of less than about 30 nm," as claimed) we will sustain the rejection of claim 1 under 35 U.S.C. § 103.

Since we have not sustained the rejection of claim 1 under 35 U.S.C. § 112, second paragraph, but we have sustained the rejection of claim 1 under 35 U.S.C. § 103, the examiner's decision is affirmed.

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

AFFIRMED

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

eak/vsh

Barry, Administrative Patent Judge, concurring-in-part and dissenting-in-part:

I agree with the majority's decision to affirm the examiner's rejection of claim 1 under 35 U.S.C. § 103(a) as obvious over Tatsumi. In addition, I would affirm his rejection of the claim under 35 U.S.C. § 112, ¶ 2, as indefinite.

I agree with the majority that, as a general proposition, the word "about" "is acceptable language in patent claims. . . ." There are, however, situations wherein "the word 'about' may lead to indefiniteness under Section 112, Para. 2." *Eiselstein v. Frank,* 52 F.3d 1035, 1040, 34 USPQ2d 1467, 1471 (Fed. Cir. 1995) (citing *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1218, 18 USPQ2d 1016, 1031 (Fed. Cir. 1991)). One such situation is "especially when, as is the case here, there is close prior art. . . ." *Amgen*, 927 F.2d at 1218, 18 USPQ2d at 1031.

Prior art does not get much closer to a claimed limitation than it does in the instant appeal. More specifically, claim 1 specifies in pertinent part the following limitation: "a maximum thickness of less than about 30 nm. . . ." For its part, Tatsumi discloses a thickness down to 30 nm. To wit, "it is possible to make grain size smaller

down to 300 Å."[1] Col. 7, ll. 25-26. Furthermore, the appellants fail to allege, let alone show, that their specification provides any indication as to what range of specific thickness is covered by the term "about." To the contrary, the specification uses the term without clarification. (Specification at 5-6, ("Continue the HSG silicon growth . . . to yield a layer of grains about 30 nm maximum thickness.")) Therefore, I would also affirm the rejection of claim 1 as indefinite.

In closing, I commend the examiner on his treatment of claim 1. "The examiner ordinarily should reject each claim on all valid grounds available. . . ." M.P.E.P. § 707(g) (8th ed. Aug. 2001). "A claim limitation which is considered indefinite cannot be disregarded." *Id.* § 2143.03. More specifically, "if a claim is subject to two interpretations . . . and one interpretation would render the claim unpatentable over the prior art, we believe the proper course of action is for the examiner to enter two rejections. . . ." *Ex parte Ionescu*, 222 USPQ 537, 540 (Bd. Pat. App. & Inter. 1984) The first should be a rejection "based on indefiniteness under 35 U.S.C. § 112, second paragraph," *id.*; the second, "a rejection over the prior art based on the interpretation of the claims which renders the prior art applicable." *Id.*

[1]The appellants recognize that a thickness of 30 nm equals a thickness of 300 Å. (Paper No. 6 at 2.)

The examiner has followed these procedures. His simultaneous rejection based on indefiniteness and rejection over Tatsumi avoids "[p]iecemeal examination," M.P.E.P. § 707(g), and "piecemeal appellate review." *Ionescu*, 222 USPQ at 540 (footnote and citations therein omitted).

LANCE LEONARD BARRY Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES

llb/vsh

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