

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 30

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEVEN D. HURWITT
and CHARLES VAN NUTT

MAILED

AUG 27 1996

Appeal No. 94-2529
Application 07/845,854¹

PAT.&T.M. OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

HEARD: August 6, 1996

Before MEISTER and STAAB, Administrative Patent Judges and
CRAWFORD, Acting Administrative Patent Judge.

MEISTER, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 26-43,²
the only claims remaining in the application.

¹ Application for patent filed March 3, 1992. According to applicants, the application is a continuation of Application 07/575,328, filed August 30, 1990.

² On page 2 of the answer the examiner notes that the appellants omitted a copy of claim 35 from the appendix to the brief and thereafter states "a correct copy of claim 35 can be found on pages 5-7 of the amendment filed Aug. 24, 1993." Such a procedure is inappropriate. In a case such as this, M.P.E.P. 1208 expressly requires the examiner to provide a copy of the missing claim.

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The appellants' invention pertains to a method of limiting the variation of the voltage utilized, as well as the "burn-in" time of a target, during a sputtering procedure. Independent claim 26 is further illustrative of the appealed subject matter and reads as follows.

26. A method of limiting the variation of the voltage of a sputtering target, and of limiting the sputter burn-in time of a sputtering target that is necessary before maintaining the target at a predetermined sputtering voltage and using the target in a sputter coating process in a vacuum processing chamber of a cathode sputtering apparatus for the productive deposition of a film onto semiconductor wafers, said method comprising the steps of:

fabricating a sputtering target while maintaining the target in an atmospheric pressure environment by:

forming the target from sputtering material to provide a sputtering surface thereon having a predetermined macroscopic shape, and

after forming the target and before exposing the target to a sputtering process, roughening the sputtering surface to create a microtexture thereon sufficiently smooth to avoid altering the macroscopic shape of the sputtering surface and at least approximately as rough as, but microscopically distinguishable from, the surface of a target which has been subjected to a sputtering process;

after the fabricating of the target, maintaining the sputtering surface of the target in unspattered condition, and, before sputtering therefrom, mounting and sealing the target in a sputter coating chamber of a sputter coating apparatus and maintaining a gas at a vacuum pressure level into the chamber;

energizing the unspattered target so mounted and sealed in said chamber to a preconditioning voltage, higher than the predetermined sputtering voltage but substantially less than 180% of the predetermined sputtering voltage, and sputtering the target for not more than approximately one hour before introducing a wafer into the chamber and

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sputtering a commercially useful film onto a wafer from the target; then

after not more than approximately one hour of sputtering at the preconditioning voltage, introducing a wafer into the chamber and energizing the target to an operating voltage not more than substantially less than 150% of the predetermined sputtering voltage and not less than approximately the predetermined sputtering voltage, and sputtering a film onto the wafer from the sputtering target.

The prior art relied on by the examiner is:

Demaray et al. (Demaray)	4,834,860	May 30, 1989
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The prior art admitted by the appellants to be old appearing on pages 1-6 of the specification. (the admitted prior art)

Claims 26-43 stand rejected under 35 U.S.C. § 103 as being unpatentable over Demaray in view of the admitted prior art.

The examiner's rejection is explained on pages 3-8 of the answer. Rather than reiterate the arguments of the appellants and the examiner in support of their respective positions, reference is made to the brief, reply brief and answer for the full exposition thereof.

OPINION

We have carefully reviewed the appellants' invention as described in the specification, the appealed claims, the prior art applied by the examiner and the respective positions advanced by the appellants in the brief and reply brief and by the examiner in the answer. As a consequence of this review, we will

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reverse the examiner's rejection of the appealed claims under 35 U.S.C. § 103 and enter new rejections of claims 26-43 under 35 U.S.C. § 112, second paragraph, and claims 26-34 and 36-39 under 35 U.S.C. § 112, first paragraph.

Considering first the rejection of claims 26-43 under 35 U.S.C. § 103, we have carefully considered the subject matter defined by these claims. However, for reasons stated *infra* in our new rejection of claims 26-43 under 35 U.S.C. § 112, second paragraph, no reasonably definite meaning can be ascribed to certain language appearing in the claims. In comparing the claimed subject matter with the applied prior art, it is apparent to us that considerable speculations and assumptions are necessary in order to determine what in fact is being claimed. Since a rejection on prior art cannot be based on speculations and assumptions (see *In re Steele*, 305 F.2d 859, 962-63, 134 USPQ 292, 295-96 (CCPA 1962) and *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)), we are constrained to reverse the examiner's rejections of claims 26-43 under 35 U.S.C. § 103. We hasten to add that this is a technical reversal rather than one based upon the merits of the Section 103 rejection.

Under the provisions of 37 C.F.R. § 1.196(b) we make the following new rejections.

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Claims 26-43 are rejected under 35 U.S.C. § 112, second paragraph, for failing to particularly point out and distinctly claim the subject matter which the appellants regard as their invention. Initially we note that the purpose of the second paragraph of Section 112 is to provide those who would endeavor, in future enterprises, to approach the area circumscribed by the claims of a patent, with adequate notice demanded by due process of law, so that they may more readily and accurately determine the boundaries of protection involved and evaluate the possibility of infringement and dominance. See *In re Hammack*, 427 F.2d 1378, 1382, 166 USPQ 204, 208 (CCPA 1970). Here, we believe that one endeavoring in future enterprises would be at a loss to determine what is covered by these claims since independent claims 26 and 35 each require the step of

roughening the sputtering surface to create a microtexture thereon sufficiently smooth to avoid altering the macroscopic shape of the sputtering surface and at least approximately as rough as, but microscopically distinguishable from, the surface of a target which has been subjected to a sputtering process.

It is, however, unclear just how rough the target which has been subjected to a sputtering process must be since the degree of roughness of a target which has been subjected to sputtering varies dependent upon (1) the time of sputtering, (2) the material from which the target is made and (3) the voltage. For

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example, compare original claim 4 wherein "the degree of coarseness" is that which would result from "several hours of burn in sputter" *vis-à-vis* original claim 14 wherein "the degree of coarseness" is that which would result from "at least one hour."

Claims 26-34 and 36-39 are rejected under 35 U.S.C. § 112, first paragraph, as being based upon a disclosure which fails to satisfy the description requirement of that paragraph. We initially note that the description requirement found in the first paragraph of 35 U.S.C. § 112 is separate from the enablement requirement of that provision. See *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555, 1561-63, 19 USPQ2d 1111, 1115-17 (Fed. Cir. 1991) and *In re Barker*, 559 F.2d 588, 591, 194 USPQ 470, 472 (CCPA 1977), cert. denied, sub. nom, *Barker v. Parker*, 434 U.S. 1064, 197 USPQ 271 (1978). Moreover, as the court stated in *In re Kaslow*, 707 F.2d 1366, 1375, 217 USPQ 1089, 1096 (Fed. Cir. 1983):

The test for determining compliance with the written description requirement is whether the disclosure of the application as originally filed reasonably conveys to the artisan that the inventor had possession at that time of the later claimed subject matter, rather than the presence or absence of literal support in the specification for the claimed language. The content of the drawings may also be considered in determining compliance with the written description requirement. (citations omitted)

Although the claimed invention does not necessarily have to be expressed in *ipsis verbis* in order to satisfy the description

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requirement (see *In re Wertheim*, 541 F.2d 257, 265, 191 USPQ 90, 98 (CCPA 1976)), it is nonetheless necessary that the disclosed apparatus inherently perform the functions now claimed (note *In re Smythe*, 480 F.2d 1376, 1383, 178 USPQ 279, 284 (CCPA 1973)). The fact one skilled in the art might realize from reading a disclosure that something is possible is not a sufficient indication to that person that the something is a part of an appellant's disclosure. See *In re Barker*, *supra*. Precisely how close the original description must come to comply with the description requirement must be determined on a case-by-case basis. The primary consideration is factual and depends on the nature of the invention and the amount of knowledge imparted to those skilled in the art by the disclosure. See *Vas-Cath Inc. v. Mahurkar*, *supra*.

In the present case, we believe the appellants' disclosure fails to reasonably convey to one of ordinary skill in the art that they were in possession of energizing the unspattered target to a preconditioning voltage higher than the predetermined sputtering voltage but substantially less than 180% of the predetermined sputtering voltage as set forth in claims 26, 29-34, 36 and 39. We further believe that the appellants' original disclosure fails to reasonably convey to one of ordinary skill in the art that they were in possession of the steps of

(1) energizing the target to an operating voltage not more than substantially less than 150% of the sputtering voltage and not less than approximately the predetermined sputtering voltage (claims 26, 27, 30-34, 36 and 37) and (2) energizing the target to an operating voltage of not more than approximately 110% of the predetermined sputtering voltage (claims 28, 29, 38 and 39).

As to the preconditioning voltage, by setting forth a preconditioning voltage that is higher than the predetermined sputtering voltage but substantially less than 180% of the predetermined sputtering voltage (claims 26, 29-34, 36 and 39), the appellants have set forth an entire range of values varying between something slightly "higher" than the predetermined sputtering voltage to something "substantially less" than 180% of the predetermined sputtering voltage. The appellants' disclosure of the sputtering voltage with respect to their invention is illustrated as beginning at point E of Fig. 4 (described on page 18, line 14, of the specification to be "for example 550 volts") and thereafter declines to point C (see specification, page 18, line 21), with point C being described as being "approximately 500 volts" (see specification, page 17, lines 16 and 17). On the other hand, the appellants' disclosure of the preconditioning voltage for their invention is illustrated as beginning at point D in Fig. 4 (described on page 18 of the specification to be "for example 700 volts") and thereafter declines to point E which, as

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we have noted above, is described as being "for example 550 volts." The preconditioning voltage that the appellants have claimed, however, is something which is in a range of voltages that extends between a voltage that is slightly higher than either 550 or 500 volts up to a voltage that is "substantially less than" 990 (180% of 550) or 900 (180% of 500) volts (e.g., 970 or 880 volts). Clearly there is no descriptive support for such a range of preconditioning voltages.

As to the claimed operating voltages, we observe that claims 26 and 36 (and claims 27, 30-34 and 37 by virtue of their dependency on these claims) set forth that

after not more than approximately one hour of sputtering at the preconditioning voltage ... energizing the target to an operating voltage not more than substantially less than 150% of the predetermined sputtering voltage and not less than approximately the predetermined sputtering voltage [Emphasis ours.]

Reviewing the appellants' disclosure, it is set forth therein that after not more than one hour of sputtering at the preconditioning voltage, the predetermined sputtering voltage is 550 volts (see page 18, line 14 and point E in Fig. 4). One hundred and fifty percent (150%) of this voltage is 825 volts. Thus, the appellants have claimed a range for the operating voltage as being any voltage in the range between "substantially less than" 825 volts and "not less than approximately" 550 volts. There is,

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however, clearly no descriptive support for such a range inasmuch as the appellants have only disclosed an operating voltage "after not more than one hour of sputtering at the preconditioning voltage" (emphasis ours) of 550 volts. Similarly, there is no descriptive support for a range of voltages between "not more than approximately 110% of the predetermined sputtering voltage" (i.e., 605 volts) and the predetermined sputtering voltage of 550 volts as set forth in claims 28, 29, 38 and 39.

In summary:

The examiner's rejection of claims 26-43 under 35 U.S.C. § 103 is reversed.

A new rejection of claims 26-43 is made under 35 U.S.C. § 112, second paragraph.

A new rejection of claims 26-34 and 36-39 is made under 35 U.S.C. § 112, first paragraph.

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