

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 11

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte CHENGGANG XIE
and
DEAN J. EICHMAN

Appeal No. 1998-1746
Application No. 08/427,462

ON BRIEF

Before CAROFF, KIMLIN, and TIMM, Administrative Patent Judges.
CAROFF, Administrative Patent Judge.

DECISION ON APPEAL

This decision on appeal relates to the final rejection of claims 1-13. Claims 14-21, all the other pending claims in appellants' application, stand withdrawn from consideration as being drawn to a non-elected invention pursuant to a restriction requirement (Paper No. 3). Therefore, claims 14-21 are not before us for consideration.

The claims on appeal relate to a surface texturing

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process and, more particularly, to a method of fabricating micro-tip structures on a surface. According to appellants' specification (page 3), the terms "micro-tip" and "cone" are used interchangeably. Claim 1, the sole independent claim, is illustrative of appellants' method:

1. A method of fabricating micro-tips, said method comprising the steps of:

providing a substrate;

depositing a first material on said substrate;

producing irregularities across at least a selected area on a surface of said deposited first material to provide increased uniformity of sites for forming micro-tips;

sputtering a second material onto said surface of first material; and

etching said first material.

The examiner relies upon the following references as evidence of obviousness:

Okino et al. (Okino)	4,952,272	Aug. 28,
1990 Kobori et al. (Kobori)	5,162,704	Nov. 10, 1992
Angell et al. (Angell)	5,288,367	Feb. 22, 1994
Kumar	5,399,238	Mar. 21, 1995

Wehner et al., "Cone Formation on Metal Targets during Sputtering," 42 Journal Of Applied Physics, no. 3, 1145-49

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(1971).

Wehner, "Cone formation as a result of whisker growth on ion
bombarded metal surfaces," 3 J. Vac. Sci. Technol. A, no. 4,
1821-35 (American Vacuum Society, 1985).

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All of the appealed claims stand rejected under 35 U.S.C. § 103 for obviousness. The claims, and the references applied against those claims, are grouped as follows:

I. Claims 1-5, 7 and 10-13 stand rejected over the combined disclosures of Kumar, Wehner et al. and Wehner.

II. Claim 6 stands rejected over the references applied in (I) above, further in view of Kobori and Okino.

III. Claims 8-9 stand rejected over the references applied in (I) above, further in view of Angell.

After careful consideration of the entire record in light of the respective positions presented by the examiner and by the appellants, we agree with the examiner that claims 1 and 7-13 fail to define patentable subject matter within the context of 35 U.S.C. § 103. However, we cannot sustain the examiner's rejections of claims 2-6 essentially for the reasons presented by appellants.

With regard to the rejections which relate to claims 1 and 7-13, we note that appellants base the patentability of dependent claims 7-13 solely upon arguments presented with regard to associated independent claim 1. Thus, dependent claims 7-13 stand or fall with claim 1.

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As for claim 1, we conclude that the examiner has established a prima facie case of obviousness based upon the collective teachings of Kumar, Wehner et al. and Wehner. Appellants disagree, primarily arguing that the patentability of their method resides in the step of producing irregularities across a selected area on a surface to provide increased uniformity of sites for forming micro-tips or cones. We find this argument to be unpersuasive for the following reasons.

First of all, as pointed out by the examiner, both of the Wehner references suggest that surface roughness is a result-effective variable with regard to cone formation. Thus, Wehner et al. (p. 1146) indicates that cones "tend to congregate at scratches and are more abundant at rough surfaces." More particularly, Wehner (paragraph bridging pages 1828 and 1829) specifically indicates that the critical threshold for cone formation is a function of many parameters including, inter alia, "surface roughness." Moreover, Wehner specifically demonstrates in Fig. 12 how indentations and scratches deliberately produced with a diamond scribe promote cone formation on an otherwise electropolished copper surface.

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In our view, these teachings provide clear motivation to those of ordinary skill in the art to deliberately introduce irregularities (indentations or scratches) at desired locations on a surface in order to promote cone formation. Determination of an optimum value of a recognized result-effective variable, here "surface roughness," is prima facie within the realm of ordinary skill absent a showing of any new or unexpected result. See In re Boesch, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).

With regard to the argument concerning "uniformity" of the sites or areas in which it is desired to form micro-tips, appellants have failed to demonstrate that the "uniformity" required by claim 1 is any different than, let alone patentably distinct from, the uniformity which can be achieved by using a diamond scriber as in Wehner to produce scratches or indentations. In this regard, we note that appellants may also use a similar implement, i.e., "a fine needle," to produce irregularities by scratching a surface (specification: p. 11, l. 19-22; claim 7). It is appellants' burden to establish that the claimed feature or characteristic, i.e.,

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"uniformity of sites," does not necessarily or inherently follow from the teachings of the prior art. See In re Spada, 911 F.2d 705, 708, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990); In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977). Mere assertions by counsel cannot substitute for factual evidence lacking in the record.

Turning to the rejection of claim 6, we are not persuaded that an ordinary artisan would have found it obvious from either Kobori or Okino to produce a stepped surface as claimed for the purpose of promoting cone formation on that surface. While those references may show stepped surfaces, such surfaces appear to serve fundamentally different purposes than that of promoting cone formation. For instance, in Kobori there is no indication that any stepped surface has anything to do with how the cone-like structure 6 was formed. In Okino, there is no indication that the surface involved in cone or pin formation, e.g., the surface of probe pin conductive layer 2, is a stepped surface in the sense defined by claim 6.

As for claims 2-5, we agree with appellants that Wehner (paragraph bridging pages 1822 and 1823) discourages the use

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of polishing solutions or other techniques which tend to leave imbedded particles behind in or on the treated surface. At least, use of such techniques is discouraged when preparing a surface for cone formation.

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For the foregoing reasons, the decision of the examiner is affirmed as to claims 1 and 7-13, and reversed as to claims 2-6.

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

MARC L. CAROFF))
Administrative Patent Judge))
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EDWARD C. KIMLIN))
Administrative Patent Judge)	APPEALS AND
))
)	INTERFERENCES
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