

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte MICHAEL H. AZARIAN, MICHAEL A. BALDWINSON,  
KEITH R. BERDING, KAYNAM CHUN, GARRETT A. GARRETTSON,  
CHRISTOPHER S. GUDEMAN, HAROLD J. HAMILTON,  
ANTHONY A. JARRAMI and SHINICHI M. TANAKA

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Appeal No. 1999-2236  
Application No. 08/408,036

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ON BRIEF

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Before KRASS, FLEMING and BARRY, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-6 and 16-18. Claims 7, 8, 19-24, 28-36, 40-52 and 54 were withdrawn as being directed to a nonelected invention. Claims 9-15, 25-27, 37-39 and 53 have been allowed.

The invention is directed to an interface between a disk surface and a transducer

contacting the surface. In particular, a recording medium is said to be provided with a unique surface topography that enables high speed sliding contact between a transducer and a rigid disk for extended periods of read/write operation with minimal wear.

Representative independent claim 1 is reproduced as follows:

1. An information storage device comprising:

a rigid body having an information storage layer with an associated surface having asperities disposed within a  $100\text{-}\mu\text{m}^2$  area and having tops, in a highest 1.0% of said area, with an average radius of curvature of at least about  $2\text{-}\mu\text{m}$ .

The examiner relies on the following references:

Suzuki et al. (Suzuki)	4,540,618	Sep. 10, 1985
Nakamura et al. (Nakamura)	5,202,810	Apr. 13, 1993

Claims 1-6 and 16-18 stand rejected under 35 U.S.C. § 103 as unpatentable over Nakamura in view of Suzuki.

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

#### OPINION

The examiner takes the position that Nakamura discloses the claimed subject matter but for the average radius of curvature of the asperities in the top one percent bearing ratio being no less than  $1.5\text{-}\mu\text{m}$ . The examiner stresses the teaching of

Nakamura that it is only necessary to concentrate on asperities in the top bearing ratios since these bearing ratios affect the slider during contact with the disk. The examiner relies on Suzuki for the teaching of using asperities, or protrusions, with a “high rate of curvature” on a recording medium in lieu of sharp protrusions since it improves head touching. The examiner then concludes that it would have been obvious to provide the protrusions of Nakamura in the upper bearing ratios with a radius of curvature as taught by Suzuki so that the slider has an improved head touching.

For their part, appellants argue that the applied references are not combinable because they relate to fundamentally different media, Suzuki referring to a flexible, plastic tape media rather than the rigid body of the claimed invention; that neither of the references suggests the radius of curvature specification recited in the pending claims; and that neither reference recognizes the problem solved by appellants of how to form or configure the surface of a rigid recording medium so that a transducer operating in contact with the medium at high speeds during read/write operation for long periods resists a catastrophic wear rate which would otherwise be expected and unacceptable.

Turning to the first argument, we agree with the examiner that Nakamura and Suzuki are sufficiently related that the artisans would have applied certain teachings of

one to the other. More specifically, appellants argue the non-combinability of the references because Suzuki’s method of making a binder/granule layer would destroy

the vacuum sputtering required by Nakamura, that no method is given for applying granules to a rigid body such as a disk and that if one were to apply Suzuki's small round granules on a rigid disk surface such as that of Nakamura, the granules "may be prone to break, crack or loosen under the force from contact to start to stop (CSS), frustrating a main purpose of Nakamura which is durable CSS" [brief-page 4].

Appellants also argue that the "small round granules of Suzuki, if applied to a rigid media, may also cause gas pockets to form under overhangs, and these gas pockets would tend to expand or contract due to changes in temperature at a much greater rate than the rigid layers surrounding them, thus destroying the surface layers. Similarly, the embedded plastic required by Suzuki would also tend to have a greatly different coefficient of thermal expansion in comparison to a rigid substrate, media or overcoat layers" [brief-pages 4-5].

These arguments by appellants relate to the bodily incorporation of the Suzuki teachings into the Nakamura device. However, a proper rejection under 35 U.S.C. § 103 does not require such a bodily incorporation. It is sufficient that one reference suggest to artisans a modification in the other reference, In the instant case, the examiner relies on Suzuki only for its teaching of using protrusions with a high rate of curvature on recording media in lieu of sharp protrusions because it improves head touching. Since improvement in the contact made between a head and the medium is also important to Nakamura (note column 1, lines 14-15, referring to improved sliding

resistance characteristics between a magnetic head and a recording medium), the suggestion, by Suzuki, that protrusions with a high rate of curvature on the surface of a recording medium improves performance would reasonably have led the artisan to increase the rate of curvature on the protrusions in Nakamura without regard to the specifics of the method used by Suzuki to obtain the “relatively large rate of curvature.”

With regard to appellants’ argument that the references do not suggest the claimed average radius of curvature, we agree with appellants that the references do not explicitly disclose the specifically claimed average radius of curvature “of at least about 2- $\mu\text{m}$ . However, it is the examiner’s position that the average radius of curvature recited in the claims is “at least about 2- $\mu\text{m}$ ” or, as in claim 16, “no less than about 1.5- $\mu\text{m}$ ” and that since no upper limit is recited, Suzuki’s teaching of a “large rate of curvature” is seen to meet the limitation. We agree that the claimed average radius of curvature, having no upper limitation, may be met by any teaching of a radius of curvature 1.5  $\mu\text{m}$  or greater. We also agree that since Suzuki recites a “large rate of curvature,” artisans would have found its specific value to be a result effective variable.

Appellants argue that even if the examiner has established a prima facie case of obviousness, such case is negated by the disclosure, at pages 7-8 of the instant specification, that shows unexpectedly good results have been achieved using appellants’ dimensions. We might agree with appellants if there was evidence showing

Appeal No.1999-2236  
Application No. 08/408,036

that the specifically claimed average radius of curvature actually resulted in surprising and unexpectedly good results. However, reference to the cited portion of the specification reveals nothing about the average radius of curvature of the asperities. That is, appellants have established no nexus between the claimed average radius of curvature and the alleged “unexpectedly good results.”

With regard to claims 2 and 3, appellants argue that the applied references do not teach the asperities rising at least 5-nm from an interposed recess within a 10- $\mu$ m lateral extent nor do they disclose elongated ridges arising at least 5-nm from interposed grooves. However, we agree with the examiner that since Nakamura teaches a height of protrusions ranging from several nm to several tens of nm and an interposed recess, or groove, is simply the space between asperities, or ridges, the claim limitations would have been obvious within the meaning of 35 U.S.C. § 103. We note no response from appellants to this argument by the examiner.

Accordingly, 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

Appeal No. 1999-2236  
Application No. 08/408,036

ERROL A. KRASS  
Administrative Patent Judge

MICHAEL R. FLEMING  
Administrative Patent Judge

LANCE LEONARD BARRY  
Administrative Patent Judge

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Appeal No.1999-2236  
Application No. 08/408,036

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