

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 38

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte YOSHINORI KADOWAKI

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Appeal No. 1997-3965  
Application No. 08/389,069<sup>1</sup>

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HEARD: January 24, 2000

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Before BARRETT, HECKER, and GROSS, Administrative Patent Judges.  
GROSS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1 through 5, 7, 8, and 10, which are all of the claims pending in this application. Claims 6, 9, and 11 through 13 have been canceled.

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<sup>1</sup> Application for patent filed February 14, 1995. According to appellant, this application is a continuation of Application No. 08/064,958, filed May 20, 1993, now abandoned.

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The appellant's invention relates to a magnetic disk apparatus having a floating slider. The longitudinal axis of the slider body coincides with a tangent line of an intermediate track when the slider is positioned over that track. In addition, two parallel rails on the slider extend obliquely to the longitudinal axis of the slider body. The rails form an angle with the tangent line of the track over which the slider is positioned, the angle being substantially zero for the innermost track and increasing as the slider moves radially away from the innermost track. Claim 1 is illustrative of the claimed invention, and it reads as follows:

1. A magnetic disk apparatus comprising:

a plurality of coaxially arranged magnetic disks having respective opposite surfaces and tracks arranged on said surfaces;

a magnetic head assembly including a rotatable head carriage with a hub and a plurality of head arms extending from the hub in a line, each of the head arms having a longitudinal central axis;

at least one floating slider having a body configured in a generally rectangular parallelepiped shape carried by each of the head arms and having at least one magnetic head for access of one of the surfaces of the magnetic disks;

said body having a longitudinal central axis extending generally parallel to the longitudinal central axis of the associated head arm and a first surface adapted to face the surface of the magnetic disk, and at least two parallel rails arranged on the first surface of the floating slider, extending obliquely to the longitudinal central axis of the body and defining a rail angle between said rails and a tangent line of a corresponding one of said tracks over which said body is positioned, wherein said rail angle is substantially zero when said body is positioned over an innermost track and said rail angle increases as said body moves radially away from said innermost track; and

wherein said longitudinal central axis of said body coincides with a tangent line of an intermediate track when said body is positioned over said intermediate track.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Toensing 1991	5,012,367	Apr. 30,
Kuroda 1994	5,299,079	Mar. 29,
	(filed April 29, 1992)	
Yamada et al. (Yamada) <sup>2</sup> 1985 (Japanese Patent specification)	JP 60-047278	Mar. 14,
Ono et al. (Ono) <sup>3</sup> 1990	JP 2-161667	Jun. 21,

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<sup>2</sup> The examiner refers to this reference as Nippon Denki K.K. Further, our understanding of this reference is based upon a translation provided by the Translations Branch of the Patent and Trademark Office.

<sup>3</sup> The examiner refers to this reference as Ricoh Co Ltd. Further, our understanding of this reference is based upon a translation provided by the Translations Branch of the Patent and Trademark Office.

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(Japanese Patent Publication)

Hanagata<sup>4</sup> JP 2-281486 Nov. 19,  
1990

(Japanese Kokai Patent Publication)

Claims 1 through 5, 7, 8, and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over Toensing in view of Yamada and either Kuroda or Ono, and for claim 8, further in view of Hanagata.

Reference is made to the Examiner's Answer (Paper No. 30, mailed November 22, 1996) and the Supplemental Examiner's Answer (Paper No. 33, mailed April 11, 1997) for the examiner's complete reasoning in support of the rejections, and to appellant's Brief (Paper No. 29, filed October 1, 1996) and Reply Brief (Paper No. 32, filed January 24, 1997) for appellant's arguments thereagainst.

#### OPINION

As a preliminary matter we note that appellant indicates on page 7 of the Brief that all of the claims are to stand or fall together. Accordingly, we will treat all of the claims

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<sup>4</sup> The examiner refers to this reference as NEC Corp. Further, our understanding of this reference is based upon a translation provided by the Translations Branch of the Patent and Trademark Office.

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as a single group with claim 1, the only independent claim, as representative.<sup>5</sup>

We have carefully considered the claims, the applied prior art references, and the respective positions articulated by appellant and the examiner. As a consequence of our review, we will reverse the obviousness rejection of claims 1 through 5, 7, 8, and 10.

Claim 1 requires that (1) the longitudinal axis of the slider body extends parallel to both the longitudinal axis of the associated head arm and also the tangent line of an intermediate track when the body is positioned thereover, (2) two rails extend obliquely to the longitudinal axis of the slider body, and (3) the angle between the rails and a tangent line of a track over which the slider is positioned is zero for the innermost track and increases as the slider moves radially away from the innermost track. The examiner asserts that Toensing shows (1) (Answer, page 4), Yamada teaches (2) (Answer, pages 5-7), and Kuroda and Ono teach (3) (Answer, pages 4-5).

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<sup>5</sup> Since the examiner only applied Hanagata against claim 8, which is to stand or fall with claim 1, we will not discuss Hanagata in this decision.

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Appellant argues (Brief, pages 8-14) that Toensing does not disclose the angular relationship between the longitudinal axis of the slider body and the tangent of an intermediate track. Appellant contends (Brief, pages 9-11, and Reply Brief, pages 4-5) that without a discussion in Toensing as to the angular relationship, the other references applied by the examiner evidence that Toensing cannot be interpreted to include the claimed relationship. However, the additional references disclose structures that differ significantly from Toensing's. On the other hand, appellant discloses (Specification, page 2, lines 22-28) a prior art structure similar to that shown by Toensing's figure 3 and admits that "[c]onventionally, . . . when the floating slider is positioned on an intermediate track the angle the rails on the floating slider form with the tangent to the radially intermediate track is zero." Thus, appellant's admissions appear to be more relevant extrinsic evidence as to what Toensing inherently discloses.

Further, appellant asserts (Brief, pages 11-14) that one cannot infer any relationship from the drawings of Toensing unless "one of ordinary skill in the art would have known the

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values for such measurements." Toensing's figures 2 and 3 show two rails aligned with the longitudinal axis of both the slider and the head arm and both the direction of rotation and position of the arm relative to the disk. The drawings appear to have the longitudinal axis of the slider parallel to a track tangent somewhere in the middle of the disk. Given appellant's admissions discussed above as to what is conventional, one of ordinary skill in the art would have known that the floating slider is parallel to the tangent of an intermediate track. Accordingly, the skilled artisan would properly interpret the drawings as having the slider body and corresponding rails aligned with the tangent of an intermediate track.

Appellant states (Brief, page 15) that even if Toensing does align the longitudinal axis of the slider with the tangent of an intermediate track, "there is no motivation to maintain the angular relationship found in Toensing (as asserted by the Examiner)" when modifying Toensing with the teachings of Kuroda and Ono. More specifically, appellant explains (Brief, pages 15-17) that Kuroda and Ono both teach aligning the slider body with the tangent of the innermost

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track and increasing the angle between the slider and the tangent of the track over which the slider is positioned as the slider moves radially outward from the innermost track. Further, Kuroda and Ono, as well as Toensing, orient the rails parallel to the longitudinal axis of the slider body. Therefore, both the longitudinal axis of the slider and the rails of the slider will be at an angle of zero degrees to the tangent of the innermost track, not an intermediate track.

We agree that the application of the teachings of Kuroda and Ono to Toensing eliminates the angular relationship between the slider body and the tangent to the intermediate track. The issue therefore is whether Yamada provides motivation for reestablishing the relationship between the slider body and the tangent to an intermediate track.

Yamada teaches forming the rails at an angle to the longitudinal axis of the slider body and aligning the slider body and arm parallel to the tangent of a track instead of aligning the slider body at a skew angle to the track tangent. Then, the apparatus can be formed more easily as the slider axis can be simply matched with the tangent of the track, thereby avoiding the difficulty of precisely providing the

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skew angle. Since Yamada has a constant skew angle, no selection of an appropriate track is required. Applying the teachings of Yamada to the combination discussed above, there is no motivation in any of the references to select a track where the skew angle is non-zero, so that the rails can be aligned at that skew angle and the slider body can be aligned parallel to the tangent to the track.

The examiner relies on Toensing's slider body being parallel to an intermediate track, but the application of Kuroda and Ono eliminates Toensing's angular relationship, and no reference teaches a reason to reestablish a zero degree angle between the slider body and the intermediate track.

Accordingly, we agree with appellant that the examiner lacks the motivation to maintain the angular relationship between the slider body and the tangent to an intermediate track.

We note that were we to apply the teachings of Yamada to Toensing first, before applying Kuroda and Ono, we would reach the same conclusion. Toensing has the rails and slider body at a zero degree angle to the tangent to an intermediate track. Yamada teaches obliquely aligning the rails on the slider body at the skew angle so as to orient the slider

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parallel to the tangent, which is easier than orienting the slider at the skew angle. However, as the slider is already aligned with the tangent of the intermediate track, there is no motivation to make the modification. Even if we could merely substitute Yamada's slider for Toensing's, thereby maintaining the angular relationship between the slider body and the tangent to the intermediate track, there is no motivation to maintain that angular relationship after applying the teachings of Kuroda and Ono. Consequently, the angular relationship between the longitudinal axis of the slider and the rails would not have been obvious. Therefore, we must reverse the rejection of claims 1 through 5, 7, 8, and 10.

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CONCLUSION

The decision of the examiner rejecting claims 1 through  
5, 7, 8, and 10 under 35 U.S.C. § 103 is reversed.

REVERSED

LEE E. BARRETT	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
STUART N. HECKER	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
	)	
ANITA PELLMAN GROSS	)	
Administrative Patent Judge	)	

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GREER BURNS & CRAIN LTD  
SUITE 8660 SEARS TOWER  
233 SOUTH WACKER DRIVE  
CHICAGO, IL 60606