

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KIYOSHI FUKUCHI,
FUMIO NAGASE,
and YOSHIAKI SAKAI

Appeal No. 96-3604
Application No. 08/383,658¹

ON BRIEF

Before HAIRSTON, FLEMING, and BARRY, Administrative Patent Judges.

BARRY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the final rejection of claims 5 and 13. The appellants

¹ Application for patent filed February 2, 1995. The application is a continuation of Application Serial No. 08/053,601, which was filed April 27, 1993 and is now abandoned.

filed an amendment after final rejection on December 14, 1995, which was entered. We reverse.

BACKGROUND

The invention relates to miniaturized magnetic disk drives. According to the appellants, miniaturizing the upper and lower magnetic heads of a disk drive increases their sliding resistance, which increases the drive's running torque. Increased torque increases the drive's consumption of power. This quickly drains the battery of a portable personal computer. (Spec. at 3-4.) In addition, a wide groove in each head reduces the penetration margin, i.e., the ability of the heads to record or reproduce. (Id. at 4.)

The invention is a miniaturized magnetic disk drive with upper and lower magnetic heads. The width of the groove in the upper head is reduced to a range between 0.2 mm and 0.4 mm. The groove in the lower head is eliminated. The reduction and elimination decrease the heads' sliding resistance and the drive's running torque and power consumption. (Id. at 11-12; Appeal Br. at 4.)

Claim 13, which is representative for our purposes,
follows:

13. A magnetic head mechanism used for a miniaturized magnetic disk apparatus, a lower and an upper magnetic head being provided in said magnetic head mechanism, said upper magnetic head being provided on a head arm being rotatably supported with respect to a head carriage and making contact with the upper surface of a flexible magnetic disk, said lower magnetic head being provided on a head carriage and making contact with the lower surface of said flexible magnetic disk, said two magnetic heads opposing each other with said flexible magnetic disk therebetween, said magnetic head mechanism comprising:

said upper magnetic head being provided on said head arm rotatably supported with respect to said head carriage, having

a first slider which slides on the upper surface of said flexible magnetic disk, and

a first head core, integrally formed with said first slider, to perform recording/reproducing of information on/from said flexible magnetic disk,

said first slider having a groove with a width from 0.2mm to 0.4mm, formed on a sliding surface of said first slider, said groove extending in a tangential direction of the rotation of said flexible magnetic disk and lying from one side face of said first slider to the other side face of said first slider; and

said lower magnetic head being fixedly mounted on said head carriage, having

a second slider, which slides on the lower surface of said flexible magnetic disk, having a planar sliding surface, without a groove being formed on the sliding surface of said second slider, said sliding surface of said lower magnetic head being positioned higher than said magnetic disk, and

a second head core, integrally formed with said second slider, to perform recording/reproducing of information on/from said flexible magnetic disk.

Besides admitted prior art (Admission), the reference relied on by the patent examiner in rejecting the claims follows:

Gomi et al. (Gomi) 4,912,582 Mar. 27, 1990.

Claims 5 and 13 stand rejected under 35 U.S.C. § 103 as obvious over Admission in view of Gomi. Rather than repeat the arguments of the appellants or examiner in toto, we refer to the appeal brief and the examiner's answer for the respective details thereof.

OPINION

In reaching our decision in this appeal, we considered the subject matter on appeal and the rejection and evidence advanced by the examiner. We also considered the appellants' and examiner's arguments. After considering the record before us, it is our view that the evidence and the level of skill in

the art would not have suggested to one of ordinary skill in the art the invention of claims 5 and 13. Accordingly, we reverse.

We begin our consideration of the nonobviousness of the claims by recalling that in rejecting claims under 35 U.S.C. § 103, the patent examiner bears the initial burden of establishing a prima facie case of obviousness. A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person having ordinary skill in the art. If the examiner

fails to establish a prima facie case, an obviousness rejection is improper and will be overturned. In re Rijckaert, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993). With this in mind, we analyze the examiner's rejection.

The examiner begins his rejection by characterizing Admission as follows.

Applicant's Prior Art teaches sliders (1), a head core (2) integrally formed with the slider, and a groove (3) which is approximately 0.7 mm formed on a sliding surface of the slider. One slider is mounted on a head arm and the other on a head carriage. The groove extends in a tangential direction to the rotation of the magnetic disk. The groove is positioned along the center of the sliding surface of the magnetic head. The slider portion of the heads (5) slides on the disk. The sliders have a planar sliding surface. A magnetic head speed relative to the disk of less than 148.9 cm/sec is provided. (Examiner's Answer at 4.)

He admits that Admission omits "a groove having a width of 0.2 to 0.4 mm, " (id.), formed on the sliding surface of the first slider. The examiner further admits the lack of a groove formed on the sliding surface of the second slider. (Id.) He notes that Gomi teaches "a disk drive system with two head sliders which can have a groove on each slider or a groove on one (above and below the disc) or a groove on neither slider" (Id.)

The examiner ends his rejection by concluding that it would have been "a matter of routine engineering skill," (Examiner's Answer at 5), to change the width of the groove in Admission's upper magnetic head from a range of 0.7 mm - 1.2

mm to a range of 0.2 mm - 0.4 mm "through routine optimization and experimentation." (Id.) He further concludes that replacing the grooved, lower slider of Admission with a slider lacking a groove as taught in Gomi would have been obvious. The examiner's rationale for the replacement is "to have provided different height levels between the two sliders" (Id.)

The appellants argue inter alia there is no suggestion to change the width of the groove in Admission's upper magnetic head. (Appeal Br. at 8-9.) In response the examiner asserts, "where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." (Examiner's Answer at 6.)

The U.S. Court of Customs and Patent Appeals (CCPA) established the rule that the discovery of an optimum value of a variable in a known process is normally obvious. In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). As with many rules, there are exceptions to the CCPA's rule. One

exception is the case where a parameter being optimized was not recognized to be a "result-effective variable." In re Yates, 663 F.2d 1054, 1057, 211 USPQ 1149, 1151 (CCPA 1981); In re Antonie, 559 F.2d 618, 621, 195 USPQ 6, 9 (CCPA 1977). We find this exception applies here.

In determining whether the invention as a whole would have been obvious under § 103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look to the subject matter recited in the claim and to those properties of the subject matter disclosed in the specification. Antonie, 559 F.2d at 619, 195 USPQ at 8. Here, the invention as a whole is "decreasing the groove width to less than 0.4 mm," (Spec. at 11), and its disclosed property. The property is that miniaturized magnetic heads with this width will reduce battery consumption thereby lengthening the "usable time of the magnetic disk apparatus." (Id.)

The controlling question is simply whether the differences (namely the value of 0.4 mm and its property)

between the prior art and the appellants' invention as a whole are such that the invention would have been obvious. The answer is no. The examiner has not shown that the prior art as a whole recognized that power consumption depends on groove width. Recognition of this dependence is essential to the obviousness of conducting experiments to decide the value of the groove width that will minimize power consumption. Such dependence can be determined from data representing the running torque of a disk drive's motor at varying groove widths as revealed by the appellants. (Spec. at 9-10.) The examiner has given us no basis for the obviousness of the necessary experiments apart from the appellants' disclosure thereof.

For these reasons, the examiner failed to show that groove width was recognized to be a result-effective variable. Therefore, we find the examiner's rejection does not amount to a prima facie case of obviousness. Because the examiner has not established a prima facie case, the rejection of claims 5 and 13 over Admission in view of Gomi is improper and is reversed.

Appeal No. 96-3604
Application No. 08/383,658

Page 10

CONCLUSION

To summarize, the decision of the examiner to reject claims 5 and 13 under 35 U.S.C. § 103 is reversed.

REVERSED

KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
MICHAEL R. FLEMING)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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LANCE LEONARD BARRY)	
Administrative Patent Judge)	

Appeal No. 96-3604
Application No. 08/383,658

Page 12

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Appeal No. 96-3604
Application No. 08/383,658

Page 13

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