

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte JOHN R. YAEGER,  
LAWRENCE W. GOLLBACH,  
and JOHN E. JONES

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Appeal No. 97-1647  
Application No. 08/321,255<sup>1</sup>

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ON BRIEF

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Before JERRY SMITH, BARRETT, 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 1-21. The appellants filed an amendment after final rejection on June 6, 1996, which was denied entry. We affirm-in-part.

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<sup>1</sup> The application was filed October 11, 1994.

BACKGROUND

The invention at issue in this appeal relates to magnetic disc drives. It adjusts fly height between the surface of a disc and a slider supported on a flexure arm in a magnetic disc drive. The disc is first rotated at a testing rate, which is less than its operating rate. At the testing rate, a laser is used to heat the flexure arm to achieve a desired bend therein and, thus, a desired fly height. The increased rate at which the disk is rotated during operation causes the fly height to increase such that the slider flies close to the surface without touching asperities in the disc's surface.

Claim 1, which is representative for our purposes, follows:

1. A method of adjusting fly height between a disc surface and a slider supported on a spring loaded flexure arm in a disc drive, comprising the steps of:
  - obtaining the disc drive;
  - obtaining a laser; and
  - heating the spring loaded flexure arm with the laser, thereby deforming a bend in the spring loaded

flexure arm to achieve a desired flexure arm bend and thereby a desired fly height.

The references relied on by the patent examiner in rejecting the claims follow:

Fechner 1989	4,812,927	Mar. 14,
Harms et al. (Harms) 1989	4,816,743	Mar. 28,
Owe et al. (Owe) 1991	5,012,369	Apr. 30,
Murata et al. (Murata) 1994	5,341,256	Aug. 23,
Buettner et al. (Buettner) 1995. 26, 1993)	5,412,519	May 2, (filed Aug.

Claim 1 stands rejected under 35 U.S.C. § 103 as obvious over Owe in view of Murata. Claims 2 and 3 stand rejected under § 103 as obvious over Owe in view of Murata further in view of Buettner. Claims 4-7, 9, 10, and 12 stand rejected under § 103 as obvious over Owe in view of Murata further in view of Fechner. Claims 8 and 13-21 stand rejected under § 103 as obvious over Owe in view of Murata further in view of

Fechner further in view of Buettner. Claim 11 stands rejected under § 103 as obvious over Owe in view of Murata further in view of Fechner further in view of Harms. Rather than repeat the arguments of the appellants or examiner in toto, we refer the reader 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 rejections and evidence advanced by the examiner. We also considered the arguments of the appellants and examiner. After considering the record before us, it is our view that the evidence and level of skill in the art would have suggested to one of ordinary skill in the art the invention of claims 1 and 4-6. We cannot say, however, that the evidence and level of skill in the art would have suggested the invention of claims 2-3 and 7-21. Accordingly, we affirm-in-part.

We begin our consideration of the obviousness of the claims by finding that the references represent the level of

ordinary skill in the art. See In re GPAC Inc., 57 F.3d 1573, 1579, 35 USPQ2d 1116, 1121 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interference did not err in concluding that the level of ordinary skill in the art was best determined by the references of record); In re Oelrich, 579 F.2d 86, 91, 198 USPQ 210, 214 (CCPA 1978) ("[T]he PTO usually must evaluate ... the level of ordinary skill solely on the cold words of the literature."). Of course, every patent application and reference relies to some extent upon knowledge of persons skilled in the art to complement that which is disclosed therein. In re Bode, 550 F.2d 656, 660, 193 USPQ 12, 16 (CCPA 1977). Persons skilled in the art, moreover, must be presumed to know something about the art apart from what the references teach. In re Jacoby, 309 F.2d 513, 516, 135 USPQ 317, 319 (CCPA 1962). With this in mind, we address the obviousness of claims 1 and 4-6, claims 2 and 3, claims 7-12, and claims 13-21 seriatim.

#### Obviousness of Claims 1 and 4-6

The appellants make three arguments regarding claims 1 and 4-6. We consider these one-by-one. First, they argue,

"one skilled in the art faced with the problems associated with prior art techniques of adjusting the fly height of a slider carried by a spring loaded flexure arm would not look to the rotary head tape head art (i.e., to the Murata et al. reference) for a solution." (Appeal Br. at 10.) In short, the appellants allege that Murata is not analogous art.

We find that the reference is analogous art. Art is analogous if a reference either is within the field of an inventor's endeavor or is reasonably pertinent to the particular problem with which the inventor was involved. In re Oetiker, 977 F.2d 1443, 1447, 24 USPQ2d 1443, 1445 (Fed. Cir. 1992); In re Clay, 966 F.2d 656, 658-59, 23 USPQ2d 1058, 1060 (Fed. Cir. 1992). Furthermore, a reference is reasonably pertinent if, because of the matter with which it deals, it logically would have commended itself to the inventor's attention in considering his problem. If the reference's disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in a rejection. An inventor may have been motivated to consider the reference when making his

invention. If it is directed to a different purpose, the inventor would have had less motivation or occasion to consider it. Clay, 966 F.2d at 659, 23 USPQ2d at 1061.

Here, the problem with which the appellants are involved is that of adjusting the height between the surface of a magnetic disc and a slider in a magnetic disc storage system. (Spec. at 2.) Because the slider functions to hold a head over the disc, (Id. at 1), the purpose of the claimed invention can be said to be adjusting the height between the disc and the head.

Similarly, the purpose of the reference is to adjust the position of a head in a magnetic tape storage system. Col. 1, ll. 6-8. The head's position includes an absolute head height, which is the distance between a datum plane of a fixed drum and a track edge of the head. Id. at ll. 20-22. The head is positioned over a magnetic tape to write video and audio signals and erase recorded tracks. Id. at ll. 12-13. In short, the purpose of Murata is to adjust the height between the tape and the head. Accordingly, both the claimed

invention and the Murata reference address the problem of adjusting the height between the surface of a magnetic medium and a head in a magnetic storage system. Therefore, the reference reasonably pertains to the particular problem with which the appellants were involved and is analogous art.

Second, the appellants allege, "there is absolutely nothing in the Owe et al., Murata et al. or Fechner references to suggest combining these references to arrive at the method and apparatus claimed by Appellants." (Appeal Br. at 10.)

We find that the prior art as a whole would have suggested combining Owe and Murata -- Fechner has not been applied to claim 1 -- to obtain the claimed invention. Obviousness can be established by combining teachings of the prior art to produce a claimed invention only where there is some teaching, suggestion, or incentive supporting the combination. In re Geiger, 815 F.2d 686, 688, 2 USPQ2d 1276, 1278 (Fed. Cir. 1987). The question is whether there is something in the prior art as a whole to suggest the desirability of making the combination. In re Rouffet, 149

F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998); In re Beattie, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992).

Here, Owe discloses a head suspension mechanism for adjusting the fly height between the surface of a disc and a slider supported on an arm in a magnetic disc drive. Col. 3, ll. 37-40. The initial static load of the slider is adjusted by modifying a feed distance of a mechanical screw. Col. 6, ll. 20-22.

Murata, however, discloses a problem associated with using a mechanical screw. Specifically, vibrations or temperature changes can loosen the screw causing the height to fluctuate. Col. 1, ll. 62-66. This is undesirable. The reference also discloses a solution to the problem. Specifically, Murata uses a laser to permanently bend a base of a head to thereby adjust the position of the head. Col. 4, ll. 26-45. The reference thereby adjusts the position of the head without being influenced by vibrations and temperature changes. Col. 2, ll. 23-25.

By recognizing the problem and offering a solution, Murata would have suggested using a laser to permanently bend Owe's flexure arm to thereby adjust the position of Owe's head to a position that would not fluctuate with vibrations or temperature changes. Thus, the prior art as a whole would have suggested the desirability of making the combination to obtain the claimed invention.

Third and last, the appellants argue, "[s]ince the Murata et al. reference does not pertain to fly height adjustment, a combination of the ... references would not result in the claimed invention in which a laser is used to permanently bend a flexure arm to thereby adjust the fly height." (Appeal Br. at 11.)

We find that the prior art would have suggested the claimed invention. One cannot establish non-obviousness by attacking references individually where a rejection is based on combinations of references. In re Merck & Co., 800 F.2d 1091, 1097 231 USPQ 375, 380 (Fed. Cir. 1986). In determining obviousness, furthermore, references are read not in isolation

but for what they fairly teach in combination with the prior art as a whole. Id. at 1097, 231 USPQ at 380.

Here, the rejection is based on the combinations of Owe and Murata. Owe pertains to fly height adjustment. The appellants admit, "[t]he mechanism taught by Owe et al. relies upon an adjustment screw ... to thereby adjust the fly height of the slider." (Appeal Br. at 6.) As aforementioned, Murata teaches using a laser to permanently bend a base of a head to thereby adjust the position of the head, col. 4, ll. 26-45, rather than relying on a screw. The substitution of Murata's use of a laser for Owe's fly-height adjustment screw would result in the claimed invention in which a laser is used to permanently bend a flexure arm to thereby adjust the fly height. Therefore, we find that the prior art would have suggested the invention of claim 1.

When the patentability of dependent claims is not argued separately, the claims stand or fall with the claims from which they depend. In re King, 801 F.2d 1324, 1325, 231 USPQ 136, 137 (Fed. Cir. 1986); In re Sernaker, 702 F.2d 989, 991,

217 USPQ 1, 3 (Fed. Cir. 1983). Here, the appellants do not argue separately the patentability of claims 4-6, which depend from claim 1. Thus, these claims fall with claim 1. Accordingly, we affirm the rejection of claims 1 and 4-6 under 35 U.S.C. § 103.

Turning to the other claims, we recall 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 is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of 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 consider the obviousness of claims 2 and 3, claims 7-12, and claims 13-21 seriatim.

Obviousness of Claims 2 and 3

The examiner begins his rejection of claims 2 and 3 by admitting that "Owe et al. in view of Murata et al. does not disclose to rotate [sic] the disc at a slower speed to calibrate the flexure arm." (Final Rejection at 3.) He opines, "Buettner et al. teaches to calibrate [sic] the fly height at various speeds disc rotation [sic] in the same field of endeavor for the purpose of eliminating the heads from sliding on the disk for periods of time ...." (Id.) The examiner ends the rejection by concluding that it would have been obvious "to calibrate the fly height at various speeds disc rotation [sic] as taught by Buettner et al. on the system of Owe et al. in view of Murata et al. in order to eliminate the heads from sliding on the disk since it is shown that the fly height is lower at slower speeds of rotation." (Id. at 4.)

In response, the appellants assert, "there is no suggestion in Buettner et al., or in any of the other cited references, to bend the spring loaded flexure arm while the disc is rotated at a reduced rate of rotation to achieve the desired fly height." (Appeal Br. at 12.)

We find that Owe, Murata, and Buettner fail to teach or to have suggested the step of rotating the disc as claimed. Claim 2 recites in pertinent part "rotating the disc at a ... rate of rotation which is less than a normal minimum operating rate ... during the step of heating the spring loaded flexure." Comparison of the claim language to Owe, Murata, and Buettner evidences that the references neither teach nor would have suggested the claimed chronological relation, viz., "during the step of heating the spring loaded flexure."

As aforementioned, the examiner admits that Owe in view of Murata does not disclose rotating the disc at a slower speed to adjust the flexure arm, which would adjust the fly height. Buettner does not remedy this defect. It discloses an idle mode in which the rotational velocity of a disk is reduced to decrease the power consumed by a disk drive. Abs., 11. 1-2. Establishment of the mode includes reducing the rotational velocity of the disk while monitoring the instantaneous amplitude of a signal indicating clearance between the surface of the disk and the drive's head. Col. 5,

11. 3-6. Numerical methods are employed to derive the fly height of the head at each measurement velocity. Id. at 11. 17-19. In short, Buettner teaches monitoring fly height at slow speeds. It does not teach adjusting fly height at slow speeds as claimed. The examiner misinterpreted the reference as teaching adjusting fly height at slow speeds, instead of its actual teaching of monitoring fly height at slow speeds.

For the foregoing reasons, the examiner failed to show that Owe, Murata, and Buettner teach or would have suggested the step of rotating the disc as in claim 2 and its dependent claim 3. 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 2 and 3 over Owe in view of Murata further in view of Buettner is improper. Therefore, we reverse the rejection of the claims under 35 U.S.C. § 103. Next, we consider the obviousness of claims 7-12.

Obviousness of Claims 7-12

The examiner begins his rejection of claims 7-12 by admitting that "Owe et al. in view of Murata et al. does not disclose to use [sic] a sensor to detect the contact between the disc and the head." (Final Rejection at 4.) He notes, "Fechner teaches to use [sic] an acoustic sensor to detect contact between the disc and the head in the same field of endeavor for the purpose of alerting the user so that the a [sic] technician may repair the problem of head to disk interaction (col. 2)." (Id. at 5.) The examiner ends the rejection by concluding that it would have been obvious "to use an acoustic sensor to detect contact between the disc as taught by Fechner on the system of Owe et al. in view of Murata et al. in order to alert the user so that the a [sic] technician may repair the problem of head to disk interaction." (Id.)

We find that Owe, Murata, and Fechner fail to teach or to have suggested the controller as claimed. Claim 7 recites in pertinent part "a controller coupled to the sensor and the laser which controls operation of the laser based upon the sensor output ...." Comparison of the claim language to Owe,

Murata, and Fechner evidences that the references neither teach nor would have suggested the claimed coupling to the sensor and the claimed basing control of the laser on the sensor's output.

As aforementioned, the examiner admits that Owe in view of Murata does not even disclose a sensor to detect contact between the disc and the head. Fechner, in turn, discloses methods and apparatus for detecting interference between the head and recording disks of a head/disk assembly in magnetic disk drives. Col. 1, ll. 5-9. The reference employs a transducer to detect acoustic stress waves corresponding to interaction between the disks and the heads. Col. 3, ll. 35-38. The examiner neglected to identify any teaching, suggestion, or incentive in Fechner or elsewhere for coupling the output of the transducer to a laser for control thereof.

For the foregoing reasons, the examiner failed to show that Owe, Murata, and Fechner teach or would have suggested the controller of claim 7 and its dependent claims 8-12. 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 7-12 over Owe in view of Murata further in view of Fechner is improper. Therefore, we reverse the rejection of the claims under 35 U.S.C. § 103. Next, we consider obviousness of claims 13-21.

Obviousness of Claims 13-21

The examiner begins his rejection of independent claims 13 and 16 by admitting that "Owe et al. in view of Murata et al. in view of Fechner does not disclose to rotate [sic] the disc at a slower speed to calibrate the flexure arm." (Final Rejection at 5.) He opines, "Buettner et al. teaches to calibrate [sic] the fly height at various speeds disc rotation [sic] in the same field of endeavor for the purpose of eliminating the heads from sliding on the disk for periods of time ...." (Id. at 6.) The examiner ends the rejection by concluding that it would have been obvious "to calibrate the fly height at various speeds disc rotation as taught by Buettner et al. on the system of Owe et al. in view of Murata et al. in view of Fechner in order to eliminate the heads from

sliding on the disk since it is shown that the fly height is lower at slower speeds of rotation." (Id.)

In response, the appellants assert, "the Examiner has incorrectly interpreted the Buettner et al. patent as teaching fly height adjustment at slow speeds, instead of its actual teaching of calibrating or monitoring fly height changes as a result of slow speeds. (Appeal Br. at 8.)

We find that the examiner failed to show that Owe, Murata, Fechner, and Buettner teach or would have suggested the invention of claims 13 and 16. At the outset we note the great breadth of claims 13 and 16. Claim 13 recites the step of "adjusting fly height" without limiting the adjusting to the use of a laser to heat a flexure arm to achieve a desired bend therein and, thus, a desired fly height. Claim 16 recites "a heating device which heats the flexure arm" without specifying that the heating deforms the flexure arm to achieve a desired bend therein and, thus, a desired fly height. Claims are not interpreted in a vacuum, however, but are part

of and are read in light of the specification. Slimfold Mfg. Co. v. Kinkead Indus., Inc., 810 F.2d 1113, 1116, 1 USPQ2d 1563, 1566 (Fed. Cir. 1987).

With this in mind, we interpret claim 13 as rotating the disc at a rate of rotation which is less than a normal minimum operating rate during the step of adjusting fly height. Similarly, we interpret claim 16 as rotating the disc at a rate of rotation which is less than a normal minimum operating rate during the heating of the flexure arm. Comparison of the claim language to Owe, Murata, Fechner, and Buettner evidences that the references neither teach nor would have suggested these chronological relations.

As aforementioned, the examiner admits that Owe in view of Murata in view of Fechner does not disclose rotating the disc at a slower speed to calibrate the flexure arm, i.e., to heat the flexure arm to adjust fly height. As explained in our consideration of claims 2 and 3, Buettner does not remedy this defect. We incorporate this explanation by reference thereto.

For the foregoing reasons, the examiner failed to show that Owe, Murata, Fechner, and Buettner teach or would have suggested rotating the disc at a rate of rotation which is less than a normal minimum operating rate during the step of adjusting fly height of claim 13 and its dependent claims 14 and 15. Similarly, he failed to show that the references teach or would have suggested or the rotating the disc at a rate of rotation which is less than a normal minimum operating rate during the heating of the flexure arm of claim 16 and its dependent claims 17-21. 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 13-21 over Owe in view of Murata further in view of Fechner further in view of Buettner is improper. Therefore, we reverse the rejection of the claims under 35 U.S.C. § 103.

We end our consideration of the claims by concluding we are not required to raise or consider any issues not argued by the appellants. Our reviewing court stated, "[i]t is not the

function of this court to examine the claims in greater detail than argued by an appellant, looking for nonobvious distinctions over the prior art." In re Baxter Travenol Labs., 952 F.2d 388, 391, 21 USPQ2d 1281, 1285 (Fed. Cir. 1991).

37 C.F.R. § 1.192(a), as amended at 37 C.F.R. § 1.192(a), as amended at 60 Fed. Reg. 14518 (Mar. 17, 1995), was controlling when the appeal brief was filed. Section 1.192(a) stated as follows.

The brief . . . must set forth the authorities and arguments on which the appellant will rely to maintain the appeal. Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences, unless good cause is shown.

Also at the time of the brief, 37 C.F.R. § 1.192(c)(8)(iv) stated as follows.

For each rejection under 35 U.S.C. 103, the argument shall specify the errors in the rejection and, if appropriate, the specific limitations in the rejected claims which are not described in the prior art relied on in the rejection, and shall explain how such limitations render the claimed subject matter unobvious over the prior art. If the rejection is based upon a combination of references, the argument shall explain why the references, taken

as a whole, do not suggest the claimed subject matter, and shall include, as may be appropriate, an explanation of why features disclosed in one reference may not properly be combined with features disclosed in another reference. A general argument that all the limitations are not described in a single reference does not satisfy the requirements of this paragraph.

In summary, section 1.192 provides that just as the court is not under any burden to raise or consider issues not argued by the appellants, the Board of Patent Appeals and Interferences is also not under any such burden.

#### CONCLUSION

To summarize, the decision of the examiner to reject claims 1 and 4-6 under 35 U.S.C. § 103 is affirmed. His decision to reject claims 2-3 and 7-21 under § 103 is reversed. Accordingly, we affirm-in-part.

No period for taking subsequent action concerning this appeal may be extended under 37 C.F.R. § 1.136(a).

AFFIRMED-IN-PART

JERRY SMITH	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
	)	BOARD OF PATENT
LEE E. BARRETT	)	APPEALS
Administrative Patent Judge	)	AND
	)	INTERFERENCES
	)	
	)	
	)	
LANCE LEONARD BARRY	)	
Administrative Patent Judge	)	

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APPEAL NO. 97-1647 - JUDGE BARRY  
APPLICATION NO. 08/321,255

APJ BARRY

APJ BARRETT

APJ JERRY SMITH

DECISION: AFFIRMED-IN-PART

Prepared by: Gloria Henderson

**DRAFT TYPED:** 12 Jun 00

**FINAL TYPED:**

Gloria, note the following instructions:

Do NOT change style of citations.

Do insert claim and reference(s).

Do check quotations.

Do proofread.1