

The opinion in support of the decision being entered today is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte OLLE GUNNAR HEINONEN, and
NURUL AMIN

Appeal 2007-3202
Application 10/145,987¹
Technology Center 2600

Decided: July 31, 2007

Before JAMESON LEE, RICHARD TORCZON, and MICHAEL P. TIERNEY, *Administrative Patent Judges*.

LEE, *Administrative Patent Judge*.

DECISION ON APPEAL

A. Statement of the Case

This is a decision on appeal by Applicants under 35 U.S.C. § 134(a) from a rejection of claims 1-5, 7-16, and 31-40 in Application 10/145,987. We have jurisdiction under 35 U.S.C. § 6(b).

¹ 35 U.S.C. § 371(c) date: May 14, 2002. The real party in interest is Seagate Technology LLC.

References Relied on by the Examiner

Hines	US 6,707,122	Mar 16, 2004
Mizoshita	US 5,583,726	Dec. 10, 1996
Gibbons	US 6,735,850	May 18, 2004

The Rejections on Appeal

The Examiner rejected claims 1-5, 7-13, 15, and 31-40 under 35 U.S.C. § 103 as unpatentable over Hines and Mizoshita.

The Examiner rejected claims 14 and 16 under 35 U.S.C. § 103 as unpatentable over Hines, Mizoshita, and Gibbons.

B. Issue

Have the Applicants shown error in the rejection of claims 1-5, 7-16, and 31-40?

C. Summary of the Decision

The Applicants have not shown error in the rejection of claims 1-5, 7-16, and 31-40.

D Findings of Fact (Referenced as FF. ¶ No.)

1. The disclosed invention is directed to magnetically sensitive read head for use in a disc drive for reading magnetically coded data on a disk. (Specification 1:8-18).

2. The independent claims are claims 1, 31 and 32; claims 1 and 32 are reproduced below:

1. A device for detecting magnetic fields, the device comprising:

a ceramic wafer;

a semiconductor mass disposed upon the ceramic wafer;

at least one conductive layer embedded within the mass,
the at least one conductive layer possessing a surface
approximately parallel to the wafer;

conductive shields disposed on opposite sides of the
semiconductor mass;

conductive contact pads disposed on opposite sides of the
semiconductor mass, and

a bias element in proximity to the semiconductor mass,
the bias element producing a biasing magnetic field within the
semiconductor mass.

32. A device for sensing a magnetic field, the device
comprising:

a ceramic wafer;

a semiconductor mass disposed upon the ceramic wafer;

at least one conductive layer embedded within the mass, the at
least one conductive layer possessing a surface approximately parallel
to the wafer;

conductive contact pads disposed on opposite sides of the
semiconductor mass;

a bias element in proximity to the semiconductor mass,
wherein a biasing magnetic field results within the
semiconductor mass; and

conductive shields disposed on opposite sides of the
semiconductor mass.

3. The Applicants state in the Appeal Brief (Br. 5:4) that claims 1-5, 7-16, and 31-40 stand and fall together.

4. Hines discloses a magnetoresistance sensor having a “van der Pauw” disk geometry and an embedded concentric metallic inhomogeneity. (Hines col. 2:55-58; col. 4: 16-18, 38-40; Fig. 1A).

5. Hines states (col. 3:33-37): “A principal object of the present invention is the provision of a magnetoresistance sensor comprising a semiconductor material containing a conductive inhomogeneity where the dimensions of the inhomogeneity are selected to optimize the magnetoresistance of the sensor.”

6. With regard to claim 1, the Examiner determined that Hines discloses every feature of the claimed invention except “conductive shields disposed on opposite sides of the semiconductor mass.” (Answer 3:17-25).

7. The Applicants do not disagree with the Examiner that Hines does not disclose “conductive shields disposed on opposite sides of the semiconductor mass.”

8. With regard to claim 1, the Applicants challenge the Examiner’s finding that Hines discloses “a bias element in proximity to the semiconductor mass, the bias element producing a biasing magnetic field within the semiconductor mass.”

9. In column 7, lines 16-22, Hines states:

It should also be straightforward to provide the 0.2T self-biasing as described in an article by S. A. Solin et al. entitled “A Self-Biasing Non-Magnetic GMR Sensor: Mercury Cadmium Telluride in Appl. Phys. Lettrs, vol 69 pages 4105-4107 (1996) or external biasing necessary to obtain a linear response close to H=0.

The above-quoted text is within the portion of Hines cited by the Examiner for meeting the requirement of the bias element. (Answer 6:21).

10. In column 7, lines 63-65, Hines further states:

It should also be easy to provide the approximately 0.2T self or external biasing necessary to obtain a linear response and higher MR close to H=0.

The above-quoted text is also within the portion of Hines cited by the Examiner for meeting the requirement of the bias element.

11. The Examiner further stated that “providing bias field is very well known in the art” (Answer 6:22). In response to that statement, the Applicants provide no reply.

12. Mizoshita is directed to a magnetic head including a magneto-resistive element for recording and reproducing signals on a magnetic disk or tape. (Mizoshita col. 1:9-17).

13. It is not in dispute that Mizoshita discloses a first magnetic shielding layer 23 and a second magnetic shielding layer 28, on opposite sides of magneto-resistive layer 26. (Mizoshita, Fig. 1b; col. 3:53 to col. 4:23).

14. Citing Mizoshita (col. 2:15-24), the Examiner determined that Mizoshita discloses including magnetic shields on opposite sides of the semiconductor mass to reduce magnetic flux leaking from the magneto-resistive element, which leakage flux causes damage to information magnetically recorded on the recording medium. (Answer 7:8-13).

15. The Applicants provide no reply to the Examiner’s determination that the magnetic shielding layers of Mizoshita are for

reducing magnetic flux leaking from the magneto-resistive element, which can damage the information stored on the recording medium.

16. Mizoshita also discloses in Fig. 9(b) magnetic shielding layers 63 on opposite sides of magneto-resistive layer 65, for protecting the magneto-resistive layer from undesirable magnetic flux entered from other tracks of the recording medium. (Mizoshita col. 8:50-56).

E. Principles of Law

One cannot show non-obviousness by attacking references individually where the rejections are based on combinations of references.

In re Keller, 642 F.2d 413, 426, 208 USPQ 871, 882 (CCPA 1981).

Motivation to combine teachings need not be expressly stated in any prior art reference. *In re Kahn*, 441 F.3d 977, 989, 78 USPQ2d 1329, 1338 (Fed. Cir. 2006). There need only be an articulated reasoning with rational underpinnings to support a motivation to combine teachings. *In re Kahn*, 441 F.3d at 988, 78 USPQ2d at 1337. “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734, 82 USPQ2d 1385, 1391 (2007).

F. Analysis

As the Appellant, the Applicants bear a burden to demonstrate that the Examiner erred in making a rejection.

The Examiner cited to portions of Hines which discuss use of external biasing for improving performance, to meet the claimed bias element required by claim 1. (FF 9-10). The external biasing is necessarily in the proximity of the magneto-resistive element in the semiconductor mass, or else it would have no meaningful effect on the magneto-resistive element.

The Applicants have provided no explanation as to why the Examiner's reliance on the cited portions of Hines are mistaken. The Applicants have also provided no response to the Examiner's finding that providing a bias field is very well known in the art. (FF 11). Thus, the Applicants' argument that Hines does not disclose a bias element in proximity to the semiconductor mass, which produces a biasing magnetic field within the semiconductor mass, is unpersuasive.

It is not disputed that Mizoshita discloses magnetic shielding layers on opposite sides of the magneto-resistive element in a magneto-resistive recording and reproducing head. (FF 13). That is the only feature missing from the disclosure of Hines, insofar as the limitations of claim 1 are concerned. The Examiner determined that Mizoshita discloses including magnetic shields on opposite sides of the semiconductor mass to reduce magnetic flux leaking from the magneto-resistive element, which leakage flux causes damage to information magnetically recorded on the recording medium. (FF 14). The Applicants provide no reply to that determination. (FF 15). Instead, the Applicants simply argue that there is no motivation to combine Mizoshita's teachings about opposingly disposed magnetic shields with the magneto-resistive head of Hines. The argument is unpersuasive.

The Applicants essentially argue that there is no motivation to combine the teachings because Mizoshita does not disclose the elements disclosed by Hines, and Hines does not disclose the elements disclosed by Mizoshita. (Br. 6:17-23). The argument is misplaced. The rejection is based not on each of Hines or Mizoshita individually, but on their combined teachings from the perspective of one with ordinary skill in the art. One cannot show non-obviousness by attacking references individually where the

rejections are based on combinations of references. *In re Keller*, 642 F.2d at 426, 208 USPQ at 882.

Motivation to combine teachings need not be expressly stated in any prior art reference. *In re Kahn*, 441 F.3d at 989, 78 USPQ2d at 1338; *see also In re Nilssen*, 7 USPQ2d 1500, 1502 (Fed. Cir. 1988). There need only be an articulated reasoning with rational underpinnings to support a motivation to combine teachings. *In re Kahn*, 441 F.3d at 988, 78 USPQ2d at 1337.

As the Supreme Court has stated in *KSR International Co.*, 127 S. Ct. at 1741, 82 USPQ2d at 1396: “Under the correct [obviousness] analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the [applicant] can provide a reason for combining the elements in the manner claimed.” Note also that in *KSR International Co.*, 127 S. Ct. at 1742, 82 USPQ2d at 1397, with regard to motivation to combine teachings, the Supreme Court stated: “Rigid preventive rules that deny fact finders recourse to common sense, however, are neither necessary under our case law nor consistent with it.” A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton. *Id.*

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR*, 127 S. Ct. at 1739, 82 USPQ2d at 1395. If a technique has been used to improve one device, e.g., protecting the recording medium from damage caused by flux leakage from the magneto-resistive element, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same

way, using the technique is obvious unless its actual application is beyond his or her skill. *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. at 1740, 82 USPQ2d at 1396.

The Examiner determined and the Applicants failed to rebut that opposingly disposed magnetic shields are used in Mizoshita to reduce leakage flux from the magneto-resistive element of its magnetic recording head, which leakage flux may cause damage to the recording medium. (FF 14-15). The Examiner's conclusion is reasonable that using the same technique in the magnetic recording head of Hines to carry out the same function to achieve the same benefit would have been obvious to one with ordinary skill in the art.

With regard to one with ordinary skill in the art, skill is presumed, not "stupidity," in the words of the Court of Customs and Patent Appeals as was stated in *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985). Here, the level of ordinary skill in the art is high, as is reflected by the prior art references Hines, Mizoshita, and Gibbons. For example, Hines states that it is straightforward and easy to provide external magnetic biasing, without providing specific details. (Hines col. 7:20-22 and 7:64-65).

Furthermore, Mizoshita also disclosed that magnetic shields would protect the magneto-resistive element from the undesirable influences of magnetic fields emanating from other tracks of the recording medium. (FF 16). One with ordinary skill in the art would have known to implement the same technique in Hines' recording head to achieve the same protection from the undesirable influences of magnetic fields stemming from other tracks on the recording medium.

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According to the Applicants, the rejection of claims 1-5, 7-16, and 31-40 all stand or fall together. (FF 3).

For the foregoing reasons, the Applicants have shown no error in the rejection of claims 1-5, 7-13, 15, and 31-40 under 35 U.S.C. § 103 as unpatentable over Hines and Mizoshita, and also no error in the rejection of claims 14 and 16 under 35 U.S.C. § 103 as unpatentable over Hines, Mizoshita, and Gibbons.

CONCLUSION

The rejection of claims 1-5, 7-13, 15, and 31-40 under 35 U.S.C. § 103 as unpatentable over Hines and Mizoshita is affirmed.

The rejection of claims 14 and 16 under 35 U.S.C. § 103 as unpatentable over Hines, Mizoshita, and Gibbons 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

lp

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