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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 21

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte KAZUHIKO HAYASHI, KENJI KATORI and AKIHIKO OKABE

Appeal No. 96-1078
Application No. 07/960,887[1]

ON BRIEF

Before HAIRSTON, BARRETT, and GROSS, Administrative Patent Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1 through 11.

The disclosed invention relates to a perpendicular magnetic recording apparatus that uses a record head having a magnetic gap portion formed of a soft magnetic thin film

[1] Application for patent filed November 14, 1992.

material that contains chiefly iron (Fe), and that has a saturation magnetic flux density of at least 19kG for recording a perpendicular magnetic recording medium. The perpendicular magnetic recording medium has a perpendicular magnetic film that contains CoPt, and that has a vertical coercive force of at least 1,500 Oe.

Claim 1 is the only independent claim on appeal, and it reads as follows:

1. A perpendicular magnetic recording apparatus for recording a perpendicular magnetic recording medium having a perpendicular magnetic film which contains CoPt and which has a vertical coercive force of at least 1500 Oe, by use of a record head having a magnetic gap portion being formed of a soft magnetic thin film that has a saturation magnetic flux density 4BMs of at least 19kG and chiefly contains Fe.

The references relied on by the examiner are:

Watanabe et al. (Watanabe) 4,745,510 May 17, 1988
Kobayashi et al.(Kobayashi) 4,858,049 Aug. 15, 1989
Otomo et al. (Otomo) 4,894,098 Jan. 16, 1990
Shiroishi et al. (Shiroishi) 5,147,732 Sept. 15, 1992

Hayashi et al. (Hayashi), "CoPtB(O) alloy films as new perpendicular recording media," Journal of Applied Physics, Vol. 67, No. 9, May 1, 1990, pages, 5175 through 5177.

Hayashi et al. (Hayashi), "Magnetic Properties and Microstructure of Co-Pt-B-O Alloy Films," Materials Research Society Symposium Proceedings, Vol. 232, pages 35 through 46.

Claims 1 through 11 stand rejected under the first paragraph of 35 U.S.C. § 112 for lack of enablement. The examiner objects to the disclosed and claimed setting of a lower limit, but not an upper limit, for the vertical coercive force and the saturation magnetic flux density.

Claims 1 through 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Shiroishi in view of Watanabe.

Claims 1 through 8 and 10 stand rejected under 35 U.S.C. § 103 as being unpatentable over either of the Hayashi publications in view of Kobayashi.

Claims 9 and 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over either of the Hayashi publications in view of Kobayashi and Otomo.

Reference is made to the briefs and the answers for the respective positions of the appellants and the examiner.

OPINION

The lack of enablement rejection is reversed, and the obviousness rejection of claims 4, 5 and 8 is reversed. The obviousness rejection of claims 1 through 3, 6, 7 and 9 through 11 is sustained.

Turning first to the lack of enablement rejection, the examiner's objection to appellants' disclosure (Answer, pages 3 and 4) does not include a reason for questioning the lack of an upper limit for the vertical coercive force and the saturation magnetic flux density. We agree with the appellants (Brief, pages 4 and 5) that the disclosed and claimed invention only requires a lower limit for the vertical coercive force and the saturation magnetic flux density, and that it is not necessary to set an upper limit for the vertical coercive force and the saturation magnetic flux density. The lack of enablement rejection of claims 1 through 11 is reversed.

Before turning to the prior art rejections, we make note of the fact that the claim 1 limitation "for recording a perpendicular magnetic recording medium having a perpendicular magnetic film which contains CoPt and which has a vertical coercive force of at least 1500 Oe" sets forth a statement of an intended use[2] of the "perpendicular magnetic recording

[2] The portion of claim 1 following the phrase "by use of" is probably a statement of intended use of the same "perpendicular magnetic recording apparatus" (Supplemental Answer, page 3).

apparatus." A statement of intended use in an apparatus claim does not distinguish that claim over a prior art apparatus. In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997); In re Casey, 370 F.2d 576, 580, 152 USPQ 235, 238 (CCPA 1967). In other words, claim 1 appears to be directed to the record head and not to the combination of magnetic recording medium and record head.

As indicated supra, the examiner relied on Shiroishi and Watanabe in the first prior art rejection of claim 1 and the claims that depend therefrom. Shiroishi is concerned with in-plane coercivity of a magnetic recording medium that contains CoPt (column 4, lines 12 through 21; column 8, lines 53 through 66). According to Shiroishi, the in-plane coercivity of the magnetic medium is not less than 1500 Oe (column 6, lines 1 through 5; column 8, lines 63 through 66). Although Watanabe discloses a perpendicular magnetic recording medium, that medium is CoCr (column 6, lines 38 through 47; claim 1[3]). The ring core head 14 in Watanabe has a saturation magnetic flux density of over 7000G (7kG) (column 18, lines 6 through

[3] It is noted that Watanabe uses the same intended use claim format as appellants.

20; claim 4). Based upon the teachings of Shiroishi and Watanabe, the obviousness rejection of claims 1 through 11 is reversed.

Turning to the new ground of rejection of claim 1, Kobayashi discloses all of the perpendicular magnetic recording apparatus of claim 1 except CoPt. The Abstract in Kobayashi states that the magnetic recording medium and the magnetic head (Figure 1) both use the same magnetic film that has Fe as its main component. "The main magnetic pole 5 [of the head] is magnetized by . . . coil 10 to generate a perpendicular magnetic field . . . and record the signal in the perpendicularly magnetizable film 4 of the magnetic recording medium 1" (column 5, lines 2 through 6). "[A] thin magnetic film . . . is used as the magnetic pole" of the magnetic recording head (column 6, lines 55 through 57). Tables 1 through 4 of Kobayashi clearly show that the saturation magnetic flux density of the magnetic thin film is not less than 19kG.

In the Abstract of the Hayashi Journal of Applied Physics publication, it is noted that CoPt and CoPtB(O) alloy films are preferred and have superior properties (e.g., coercivity

and saturation magnetic flux density) over CoCr perpendicular materials in perpendicular recording media. The same CoPt and CoPtB(O) alloys are disclosed in the Hayashi Materials Research publication for use as perpendicular recording media. For the advantage of the superior properties noted in the Abstract of the Hayashi Journal of Applied Physics publication, it would have been obvious to one of ordinary skill in the art to use CoPt or CoPtB(O) in place of the CoCr used in Kobayashi. The vertical coercive force of these alloys is described in both publications as being higher than 1500 Oe.

Based upon the foregoing, appellants' argument (Supplemental Reply Brief, page 2) concerning hindsight is without merit. The obviousness rejection of claim 1 based upon Kobayashi and the Hayashi publications is sustained. The obviousness rejection of claims 2, 3 and 10 is likewise sustained because appellants have chosen to let these claims stand or fall with claim 1 (Reply Brief, page 3).

The opening sentence in the Introduction section of the Hayashi Journal of Applied Physics publication states that it is directed to high density magnetic recording. In light of

this teaching, the other teachings found in Kobayashi and the Hayashi publications, and the well-known double-sided, high-density, 3.5 inch magnetic computer disks, the obviousness rejection of claims 6 and 7 is sustained.

The obviousness rejection of claims 9 and 11 is sustained because appellants have not presented any patentability arguments for these claims that differ from those for claim 1 (Reply Brief, pages 5 through 7).

The obviousness rejection of claims 4 and 5 is reversed because the applied prior art does not form the perpendicular magnetic film on an auxiliary magnetic layer which is in turn formed on a nonmagnetic substrate, and because the recording material is now considered to be part of the combination of claim 1.

The obviousness rejection of claim 8 is reversed because the applied prior art does not provide any description of a perpendicular magnetic film of a perpendicular magnetic recording medium that is formed of an "artificial lattice film" of Co and Pt.

DECISION

The decision of the examiner rejecting claims 1 through 11 under the first paragraph of 35 U.S.C. § 112 is reversed, and the decision of the examiner rejecting claims 1 through 11 under 35 U.S.C. § 103 is affirmed as to claims 1 through 3, 6, 7 and 9 through 11, and is reversed as to claims 4, 5 and 8. In summary, the decision of the examiner is affirmed-in-part.

No period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

KENNETH W. HAIRSTON Administrative Patent Judge	)	
LEE E. BARRETT Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)	

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Appeal No. 96-1078
Application No. 07/960,887

APJ HAIRSTON

APJ BARRETT

APJ GROSS

DECISION: AFFIRMED-IN-PART
Send Reference(s): Yes No
or Translation (s)
Panel Change: Yes No
Index Sheet-2901 Rejection(s): _____

Prepared: January 11, 2000

Draft Final

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OB/HD GAU

PALM / ACTS 2 / BOOK
DISK (FOIA) / REPORT