Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte YIMING HUAI

Appeal No. 2002-1212
Application No. 09/349,745

ON BRIEF

Before KIMLIN, JEFFREY T. SMITH and MOORE, ***Administrative Patent Judges***.

JEFFREY T. SMITH, ***Administrative Patent Judge.***

DECISION ON APPEAL

Applicant appeals the decision of the Primary Examiner finally rejecting claims 1 to 10, 12 to 17 and 19 to 23, all of the pending claims.[1, 2] We have jurisdiction under 35 U.S.C. § 134.

---

[1] In rendering our decision, we have considered Appellant's arguments presented in the Brief, filed August 6, 2001 and the Reply Brief, filed January 24, 2002.

[2] The Appellant has indicated that claims 11 and 18 have been cancelled. (Brief, p. 2).

CITED PRIOR ART

As evidence of unpatentability, the Examiner relies on the following references:

Coffey et al. (Coffey)	5,583,725	Dec. 10, 1996
Kim et al. (Kim)	5,637,235	Jun. 10, 1997
Kanai	5,850,323	Dec. 15, 1998

The Examiner has rejected claims 1 to 10, 12 to 17 and 19 to 23 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Coffey and Kanai; and claims 1 to 10, 12 to 17 and 19 to 23 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Coffey and Kim. (Answer, pp. 3 to 9).

DISCUSSION

We have carefully reviewed the claims, specification and applied prior art, including all of the arguments advanced by both the Examiner and Appellant in support of their respective positions. This review leads us to conclude that the Examiner's § 103 rejections are not well founded. ***See In re Oetiker***, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); ***In re Piasecki,*** 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). Rather than reiterate the conflicting viewpoints advanced by the Examiner and Appellant concerning the above-noted rejection, we refer to the Answer and the Brief and Reply Brief.

Appellant's invention is directed to a magnetoresistive (MR) spin valve sensor for reading magnetically stored data. The magnetized bits on the recording media change the magnetization between the pinned layer and the free layer. The spin valve sensor detects changes in current electrical resistance which occurs as a result of the orientation of the magnetization of ferromagnetic layers within the sensor. (Specification, p. 1). Claim 1, which is representative of the claimed invention, appears below:

> 1. A top spin valve comprising
> (i) a seed layer comprising Ni and Cr;
> (ii) a free layer on the seed layer;
> (iii) a pinned layer overlying the free layer; and
> (iv) a spacer layer between the pinned and free layers.

Since we reverse the Examiner's rejections, we need to address only the independent claims, i.e., claims 1, 13 and 20.

The Examiner rejected claims 1 to 10, 12 to 17 and 19 to 23 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Coffey and Kanai.

The top spin valve of Appellant's independent claims requires at least (i) a seed layer comprising Ni and Cr, (ii) a free layer on the seed layer, (iii) a pinned layer overlying the free layer, and (iv) a spacer layer between the pinned and free layers or a method of forming the same.

The Examiner asserts the invention of Coffey differs from the claimed invention in that there is no express disclosure of a seed layer containing NiFeCr. (Answer, p. 4). To remedy this deficiency, the Examiner relies on Kanai. According to the Examiner, Kanai discloses "a MR sensor having a pre-seed Ta layer (12a) is part of a seed layer also having a NiFeCr (12c) seed layer under a MR sensor layer structure." (Answer, p. 4). The Examiner concludes "one of ordinary skill in the art would have been motivated to furnish the MR sensor assembly having a seed layer under the MR sensor layers as shown in Coffey et al '725 with the seed layer being made of NiFeCr as shown by Kanai '323 because it would have allowed further abatement of noise in the head by allowing a marked decrease in the anisotropic magnetoresistive effect." (Answer, Paragraph bridging pages 4 and 5).

Appellant argues that the free layer 33 of Coffey serves a different function and has different magnetic properties than the antiferromagnetic NiMn layer 13 of Kanai. Appellant argues that there is no reason to believe that the seed layer(s) of Kanai would provide Coffey with a noise reduction. Appellant specifically states "the two-layer structure 12 of ***Kanai et al***. is specifically tailored to seeding layers of NiMn (col. 1 lines 18-19) and NiMn alloys (col. 5 lines 47-50), but nowhere does ***Kanai et al.*** teach or suggest that it could be applied to seeding any other alloy class. As described above, both

of the layers of the two-layer structure 12 are required to impart the desired FCT crystal structure to the NiMn layer 13 (col. 2 lines 21-31). However, the free layer 35 of ***Coffey et al.*** is neither NiMn nor a NiMn alloy, but is instead a soft magnetic material such as Co or a Co alloy (col. 4 line 61 and col 7 lines 13-17)." (Brief, pp. 5-6).

The Examiner has not adequately responded to Appellant's argument that there is no reason to believe that the seed layer(s) of Kanai would provide Coffey with a noise reduction. The Examiner's response, Answer pages 9-10, does not indicate that the Co or Co alloy free layer of Coffey would experience the same or similar crystal structure as Kanai's NiMn or NiMn alloy. Thus, there is no reasonable basis to believe that Coffey would experience the same reduction in noise as Kanai.

The Examiner also rejected claims 1 to 10, 12 to 17 and 19 to 23 as unpatentable under 35 U.S.C. § 103(a) as obvious over the combination of Coffey and Kim.

As stated above, the Examiner recognized that Coffey did not disclose a seed layer containing Ni and Cr as required by claims 1, 13 and 20. To remedy this difference the Examiner asserts that Kim discloses a MR sensor having a NiCr buffer seed layer under a MR sensor layer structure. (Answer, p. 7). The Examiner concludes that "one of ordinary skill in the art would have been motivated to furnish the MR sensor assembly having a seed layer under the MR sensor layers as shown in Coffey et al '725 with the

seed layer being made of NiCr as shown by Kim et al '235 because the MR cofficient and thermal stability of the MR sensor would have been significantly improved; see column 4, lines 53-59 or Kim et al '235." (Answer, p. 7).

We, like the Appellant (Brief, p. 7), have reviewed the cited portion of the Kim reference and do not find support for the rationale advance by the Examiner. The Examiner has failed to address the Appellant's concerns raised in the Brief. Thus, we conclude that the Examiner's rejection is based on speculation. Speculation is not a sufficient basis for a ***prima facie*** case of obviousness. ***See In re Warner,*** 379 F.2d 1011, 1017, 154 USPQ 173, 178 (CCPA 1967); ***In re Sporck,*** 301 F.2d 686, 690, 133 USPQ 360, 364 (CCPA 1962). The rejection is reversed.

CONCLUSION

For the above reasons, and those stated in the Briefs, we conclude that the Examiner has not carried the burden of establishing a ***prima facie*** case of obviousness of the invention recited in any of the Appellant's claims. Consequently, we reverse the Examiner's 35 U.S.C. § 103 rejections.

REVERSED

EDWARD C. KIMLIN ***Administrative Patent Judge***	)
JEFFREY T. SMITH ***Administrative Patent Judge***	) **BOARD OF PATENT APPEALS AND INTERFERENCES**
JAMES T. MOORE ***Administrative Patent Judge***	)

JTS/kis

CARR & FERRELL LLP
2225 EAST BAYSHORE ROAD
SUITE 200
PALO ALTO, CA 94303