

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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ROBIN F. C. FARROW, RONALD F. MARKS,
DANIELE MAURI and STUART S. P. PARKIN

Appeal No. 1997-1233
Application 08/348,551

ON BRIEF

Before HAIRSTON, KRASS and LALL, Administrative Patent Judges.

LALL, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection¹ of claims 1 to 11, all of the claims in the application.

¹ An amendment after the final rejection was filed as paper no. 7 and was entered in the record [paper no. 8]. However, no changes were made to the claims.

Appeal No. 1997-1233
Application 08/348,551

The invention relates to a magnetoresistive sensor for use in reading magnetically recorded data from a disk in a hard disk drive. The magnetoresistive sensor is a permalloy (Ni-Fe alloy) sensor layer formed on the trailing end of a carrier. The sensor faces the surface of the disk that contains the magnetically recorded data. The sensor is connected by a lead to a current source and operates to read data via changes in the magnetic flux that represent data on the disk that in turn cause changes in the electrical resistance of the sensor layer. It is desirable for the magnetoresistive sensors to be as thin as possible so that the data density can be increased on the disk, and to have a high magnetoresistive coefficient (the change in resistance divided by the average resistance, or $\Delta R/R$). However, a reduction in the sensor thickness results in a reduction in $\Delta R/R$. It is also necessary for the sensor layer to have a low magnetostriction, which is the fractional change in length of the sensor layer when it is changed from its unmagnetized state to its magnetized state. The invention has achieved a

Appeal No. 1997-1233
Application 08/348,551

sensor which has both a high $\Delta R/R$ as a function of the sensor layer thickness for very thin layers, and a very low magnetostriction.

Claim 1 is reproduced below as representative of the invention.

1. A magnetoresistive sensor comprising:

a substrate essentially non-reactive with a Ni-Fe alloy at elevated temperatures;

a film consisting essentially of a $\text{Ni}_{(1-x)}\text{Fe}_{(x)}$ alloy, where x is in the range of approximately 0.23 to 0.15, formed directly on the substrate to a thickness in the range of approximately 50 to 400 \AA , the film having a magnetoresistance coefficient greater than $[4.1/(1+66.3/t)]$, where t is the film thickness in \AA , and a magnetostriction in the range of approximately -5×10^{-6} to zero.

The Examiner relies on the following references²:

Katsumata et al. (Katsumata '943) 1991	5,032,943	Jul. 16,
Katsumata et al. (Katsumata '149) 1993	5,181,149	Jan. 19,

² A reference is made to various other publications in the Declaration attached as Appendix B to the brief and also in the answer. However, since the rejection on appeal does not rely on those references, we have not considered them in our opinion.

Appeal No. 1997-1233
Application 08/348,551

Claims 1 to 7 stand rejected under 35 U.S.C. § 102 over Katsumata '943, and claims 8 to 11 stand rejected under 35 U.S.C. § 103 over Katsumata '943 in view of Katsumata '149.

Rather than repeat verbatim the arguments of Appellants and the Examiner, we make reference to the brief and the answer for the respective details thereof.

OPINION

We have considered the rejections advanced by the Examiner and the supporting arguments. We, likewise, have reviewed Appellants' arguments set forth in the brief against the rejections.

We reverse.

We now analyze the various grounds of rejection.

Rejection under 35 U.S.C. § 102

The Examiner has rejected claims 1 to 7 as being anticipated by Katsumata '943.

We note, as a general proposition, that a prior art reference anticipates the subject of a claim when the

Appeal No. 1997-1233
Application 08/348,551

reference discloses every feature of the claimed invention, either explicitly or inherently (see Hazani v. Int'l Trade Comm'n, 126 F.3d 1473, 1477, 44 USPQ2d 1358, 1361 (Fed. Cir. 1997) and RCA Corp. v. Applied Digital Data Systems, Inc., 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984)).

More specifically, regarding inherency, it has been held that [i]f the prior art reference does not expressly set forth a particular element of the claim, that reference still may anticipate if the element is "inherent" in its disclosure. To establish inherency, the extrinsic evidence "must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." Continental Can Co. V. Monsanto Co., 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient." Id. 948 F.2d at 1269, 20 USPQ2d at 1749 (quoting In re Oelrich, 666 F.2d 578, 581, 212 USPQ 323, 326 (CCPA 1981)).

Appeal No. 1997-1233
Application 08/348,551

Appellants have elected for all claims to stand or fall together [brief, page 5]. We take claim 1 as the representative claim. The Examiner asserts [answer, page 3] that "[t]he NiFe film of Katsumata ['943] will inherently have a magnetoresistance coefficient which meets the limitation expressed as an equation in, for example, line 7 of claim 1." (Emphasis added). Appellants argue [brief, page 5] that "[t]his assertion was devoid of fact and/or reasoning; it was [a] mere speculation. In response, Appellants submitted the declaration of Daniel Mauri, which stated detailed scientific reasoning ... that it is impossible ... to determine the magnetoresistance

coefficient of the Katsumata '943 films." The Examiner at length [answer, pages 5 to 10] offers a lengthy response to the Appellants' arguments. The Examiner's response contains statements such as:

[A]n MR film is preferably made of a material having a magnetostrictive constant of substantially zero so that the magnetoresistance of the film is not easily affected with an external stress applied thereto, thus allowing the coefficient

Appeal No. 1997-1233
Application 08/348,551

of magnetoresistance to be optimized. [id. 6 to 7], (emphasis added).

Such an evaluation could include evaluation over a limited range of values for those parameters which are not specifically disclosed." [id. 7], (emphasis added).

The Examiner's position remains that)R/R value of Katsumata ['943] would be wholly measurable and would be expected to exhibit values corresponding to those dictated by the claimed relationship." [id. 9], (emphasis added).

We are of the view that whereas the Examiner has made a valiant effort to respond to the Appellants' arguments, the response does not comport with the requirements of the doctrine of inherency discussed above. The Examiner has not presented any extrinsic evidence to support his position. The Examiner's response consists of statements of the type quoted above which all advocate the possibilities and probabilities of the existence of the alleged inherent characteristic defined by the claimed equation. Instead, the law requires that the alleged characteristic must necessarily be present in the evidence presented, not merely by a probability or speculation. We do not find the alleged characteristic to be necessarily present in the evidence presented by the Examiner. Therefore, we do not sustain the anticipation reject of claim

Appeal No. 1997-1233
Application 08/348,551

1, and hence, the grouped claims 2 to 7 over Katsumata '943.

Rejection under 35 U.S.C. § 103

Claims 8 to 11 are rejected as being obvious over Katsumata '943 in view of Katsumata '149. However, since Appellants have elected these claims to stand or fall with claim 1, we need not discuss them any further except to note that Katsumata '149 does not add anything to cure the deficiency noted above. Therefore, we also do not sustain the obviousness rejection of claims 8 to 11 over Katsumata '943 in view of Katsumata '149.

In conclusion, we reverse the final rejection of claims 1

Appeal No. 1997-1233
Application 08/348,551

to 7 under 35 U.S.C. § 102 over Katsumata '943. Further, we reverse the obviousness rejection under 35 U.S.C. § 103 of claims 8 to 11 over Katsumata '943 in view of Katsumata '149.

REVERSED

)	
KENNETH W. HAIRSTON)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
ERROL A. KRASS))
Administrative Patent Judge)	APPEALS AND
)	
)	INTERFERENCES
)	
PARSHOTAM S. LALL)	
Administrative Patent Judge)	

Appeal No. 1997-1233
Application 08/348,551

PSL/pgg
Thomas R. Berthold
IBM Corporation
Dept. K02/802
650 Harry Road
San Jose, CA 95120-6099