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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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. 34

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KENJI OHTA, AKIRA TAKAHASHI,
YOSHITERU MURAKAMI, JUNICHIRO NAKAYAMA,
and TOMOYUKI MIYAKE

Appeal No. 95-2427
Application 08/013,987[1]

HEARD: December 9, 1998

Before WEIFFENBACH, ELLIS and OWENS, *Administrative Patent Judges*.

WEIFFENBACH, *Administrative Patent Judge*.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 1, 2 and 4-14, which are all of the claims remaining in the application. We reverse and enter a new ground

[1] Application for patent filed February 5, 1993. According to appellants, the application is a continuation of Application 07/715,738, filed June 18, 1991, now abandoned, which is a continuation of Application 07/275,724 , filed November 23, 1988, now abandoned.

of rejection pursuant to the provisions of 37 CFR § 1.196(b).

The Claimed Subject Matter

The claims on appeal are directed to a magneto-optic memory medium. Claim 1 is representative of the claimed subject matter and reads as follows:

> A magneto-optic memory medium consisting essentially of:
>
> a first dielectric film, a magneto-optic memory film, a second dielectric film and a reflective film, wherein said films are superposed in layers on a light trans-mitting substrate, the magneto-optic memory film being a rare earth-transition metal alloy film havng the composition formula:
>
> $$(Gd_xTb_{1-x})_yFe_{1-y}$$
>
> wherein x is 0.58 to 0.62, and y is 0.27 to 0.33, and wherein said magneto-optic memory film has a thickness of 20-50 nm.

References of Record[2]

The following references of record are relied upon by the examiner as evidence of obviousness:

Takahashi et al. (Takahashi)	4,610,912	Sep. 9, 1986
Tanaka et al. (Tanaka)	4,814,238	Mar. 21, 1989
Gardner	4,833,043	May 23, 1989
Denwa et al. (Denwa)[3]	2 071 696 A	Sep. 23, 1981

[2] In their brief, appellants refer to attached documents A, B and C attached to the brief. In our review, we did not find the documents identified as A, B and C attached or included with the brief. We further note that in the answer, the examiner made no comment about the documents. Since we are reversing the examiner's rejection, we find it unnecessary to remand this case to the examiner.

[3] The document lists the first named applicant as "Kokusai Kenshin Kenwa" and the first named inventor as "Kokusai Kenshin Denwa." These first named applicant and first named inventor appear to be same person, but the spelling of the last name of one of the names is must be incorrect.

(UK Patent Application)

Imamura et al. (Imamura), "Magneto-Optical Recording On Amorphous Films," *IEEE Transactions On Magnetics*, Vol.-Mag. 21, No. 5, pages 1607-12, September 1985.

The Rejection

Claims 1, 2 and 4-14[4] stand rejected under 35 U.S.C. § 103 as being unpatentable over Denwa in view of Gardner, Tanaka and Imamura, and further in view of Takahashi.

Opinion

We have carefully considered the respective positions advanced by appellants and the examiner. For the reasons set forth below, we reverse the examiner's rejection and enter a new ground of rejection under 35 U.S.C. § 112, fourth paragraph.

While Takahashi discloses a magneto-optic memory medium comprising a first dielectric film, GdTbFe magneto-optic memory film which is 35 nm thick, a second dielectric film and a reflective film (col. 4, lines 21-23, Example I) as superimposed layers on a transparent substrate, we do not find that the prior art relied upon by the examiner, taken as a whole, presents a *prima facie* case of obviousness for the claimed medium having the GdTbFe composition set forth in the claims. We find that the examiner's analysis of the prior art would not have led a person having ordinary skill in the art to the recited GdTbFe

[4] In the final Office action, the examiner stated that claims 1, 2 and 4-14 were rejected. However, in the answer, the examiner stated that claims 1 and 3-14 were rejected. Since claim 3 was cancelled by amendment "C" (paper no. 11) which was filed before the final Office action (paper no. 23), we consider the examiner's statement in the answer of the claims rejected is in error and should have been claims 1, 2 and 4-14.

composition.

Appellants claim very limited ranges for x and y in the GdTbFe composition. They further disclose a film that the claimed ranges are critical (specification: p. 8, lines 8-16). Denwa discloses a $(Gd_xTb_{1-x})_yFe_{1-y}$ film wherein 0.00 # x # 1.00 and 0.15# y# 0.35. The examiner acknowledges that while these broad ranges overlap the claimed ranges, the reference does not disclose the limited ranges for x and y set forth in appellants' claims. The examiner refers to two examples set forth on page 2, lines 77 and 78 of the Denwa wherein the following alloy compositions are disclosed: $Gd_{0.17}Tb_{0.14}Fe_{0.79}$ and $Gd_{0.10}Tb_{0.17}Fe_{0.73}$. The first formula appears to be in error since the amounts of the components do not add up to 100. We will presume, as apparently did the examiner and appellants, that the amount of Fe in the first formula should be 69, and not 79.

According to Denwa, his GdTbFe alloy compositions are characterized by larger light reproduced output (p. 2, lines 44-53). Considering the increased light output of Denwa's GdTbFe compositions, it would have been obvious to use such compositions in Takahashi's magneto-optic memory element. However, Denwa's alloy compositions $Gd_{0.17}Tb_{0.14}Fe_{0.69}$ and $Gd_{0.10}Tb_{0.17}Fe_{0.73}$ do not come within the scope of appellants' claimed alloy. Alloy composition $Gd_{0.10}Tb_{0.17}Fe_{0.73}$ has a y value of 0.27 which is within appellants' claimed r ange, but an x value of 0.37 which is outside the claimed range. Alloy composition $Gd_{0.17}Tb_{0.14}Fe_{0.69}$ has a value of x of 0.55 and a value of y of 0.31. While the value of y is within appellants' claimed range for y, the value of x is just outside the claimed range for x of 0.58 to 0.62. Appellants concede that alloy $Gd_{0.17}Tb_{0.14}Fe_{0.69}$ is closest to the claimed magneto-optic film alloy.

The value of x of Denwa's $Gd_{0.17}Tb_{0.14}Fe_{0.69}$ alloy is so close to appellants claimed alloy that one skilled in the art would have expected Denwa's alloy and appellants' claimed alloy to have the same properties. *Titanium Metals Corp. v. Banner,* 778 F.2d 775, 782, 227 USPQ 773, 779 (Fed. Cir. 1985). To show that the properties are not the same, appellant refers us to Table 1 on page 11 of the specification. Appellant points to alloy composition 3 in the Table wherein x has a value of 0.56 and y has a value of 0.27. Appellants contend that this alloy is the closest alloy to Denwa's alloy. Alloy composition 3 in the Table shows a C/N value which is at least 2.4 dB less than the C/N values for alloy compositions 4, 5 and 6 which are within the scope of appellants' claimed alloy. Appellants also point to Fig. 1 in their brief which compares the Curie temperature (Tc) and coercive force (Hc) of Denwa's $Gd_{0.17}Tb_{0.14}Fe_{0.69}$ alloy to compositions having y values of 0.20-0.35 and x values of 0.0 to less than 0.35 (specification: Fig. 2; p. 10, lines 1-11). The Tc for Denwa's alloy composition is 190E C. which is signicantly higher than appellants claimed alloy which is about 160E C. while the Hc for Denwa's alloy composition is 400 Oe which is significantly below that for the claimed alloy which is over 1000 Oe. We find that the evidence presented by appellants is sufficient to show that the Tc and Hc properties of Denwa's alloy and appellants' claimed alloy are not the same, but are significantly different.

We have considered the examiner's analysis of the teachings of Gardner, Imamura and Tanaka wherein the examiner concludes that a person having ordinary skill in the art would have been motivated to optimize the amount of Gd to enhance the Kerr rotation angle. The examiner's analysis is as follows:

> Gardner ‹043 also teaches an amount of GdTb at 31 at.%. (C.6: 29-33). Thus,

> it is known that the amount of rare earth can be set at the high end of the range from .15 at.% to 35 at.% and still maintain perpendicular anisotrophy.
>
> With respect to the value of "x" it is generally known that Gd contributes to increasing the Kerr angle of rotation (resulting in higher S/N) but has the disadvantage of increasing the curie [sic, Curie] point and depressing the coerceive force. Tb, on the other hand, contributes to a high coercive force and low curie [sic, Curie] temperature, but has the disadvantage of a low Kerr angle of rotation. For example, see Denwa ‹686 where GdFe has a much higher S/N ratio than Tb Fe or DyFe, (Fig. 2); Tanaka et al ‹238 which teaches that in "GdTbFe systems ... Gd or Co may [be] included for the purpose of improving their reproducing characteristics ..." (C.2: 53-55), and finally Imamura, N[.] et al (R) "[i]t is clear from these figures that Gd and Co have the remarkable effect of increasing [Kerr rotation], mainly due to the increase in Tc [sic, T_c]." (p. 1607-1608).
>
> Thus, from the above citations it is suggested that Gd and Tb relative to each other and to the amount of Fe are result effective parameters dependent upon the desired coercivity, Kerr rotation angle, and curie [sic, Curie] temperature. In light of this, it would have been obvious, [sic] to one skilled in the art of magetooptics to adjust the amount of each element to optimize desired recording properties. The motivation to optimize the proportion of each alloy rests with the broad teachings that the amunt of rare earth should be between 15 at.% to 35 at.%, and the narrower disclosures teaching that Gd enhances the Kerr rotation angle. Thus, one would be motivated to add as much Gd as is optimum to enhance the Kerr rotation angle, even at the expense of reduced Hc [sic, H_c] and greater Tc [sic, T_c].

We find the examiner's analysis to be insufficient to present a *prima facie* case of obviousness. While a person skilled in the art may have been motivated to optimize the Kerr rotation angle by adding Gd, the analysis fails to explain how optimization would have led such a person to the claimed range for the value of x. Moreover, we do not find that Gardner, Imamura and Tanaka make up for the deficiencies of the combined teachings of Denwa and Takahashi.

For the foregoing reasons, the rejection of the claims under 35 U.S.C. § 103 as being unpatentable over the teachings of Denwa, Gardner, Tanaka, Imamura and Takahashi is reversed.

New Ground of Rejection

Under the provisions of 37 CFR § 1.196(b), we enter the following new ground of rejection. Claim 2 is rejected under 35 U.S.C. § 112, fourth paragraph. Claim 2, which is dependent on claim1, does not further limit claim 1. Claim 1 equates the magneto-optic memory film with a rare earth-transition metal alloy film. Claim 1 defines the thickness of the magneto-optic memory film as being 20-50 nm while claim 2, defines a broader thickness range the same film, namely, 5-100 nm.

Decision

For the foregoing reasons, the examiner's rejection of claims 1, 2 and 4-14 under 35 U.S.C. § 103 as being unpatentable over Denwa, Gardner, Tanaka, Imamura, and Takahashi is reversed. This decision contains new grounds of rejection pursuant to 37 CFR § 1.196(b) (amended effective Dec. 1, 1997, by final rule notice, 62 Fed. Reg. 53,131, 53,197 (Oct. 10, 1997), 1203 Off. Gaz. Pat. & Trademark Office 63, 122 (Oct. 21, 1997)). 37 CFR § 1.196(b) provides that "[a] new ground of rejection shall not be considered final for purposes of judicial review."

37 CFR § 1.196(b) also provides that the appellants, WITHIN TWO MONTHS FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new ground of rejection to avoid termination of proceedings (37 CFR § 1.197(c)) as to the rejected claims:

> (1) Submit an appropriate amendment of the claims so rejected or a showing of facts relating to the claims so rejected, or both, and have the matter reconsidered by the examiner, in which event the application will be remanded to the examiner....
>
> (2) Request that the application be reheard under § 1.197(b) by the Board of Patent

Appeals and Interferences upon the same record....

Should the appellants elect to prosecute further before the primary examiner pursuant to 37 CFR § 1.196(b)(1), in order to preserve the right to seek review under 35 U.S.C. §§ 141 or 145 with respect to the affirmed rejection, the effective date of the affirmance is deferred until conclusion of the prosecution before the examiner unless, as a mere incident to the limited prosecution, the affirmed rejection is overcome.

If the appellants elect prosecution before the examiner and this does not result in allowance of the application, abandonment or a second appeal, this case should be returned to the Board of Patent Appeals and Interferences for final action on the affirmed rejection, including any timely request for rehearing thereof.

REVERSED and 37 CFR § 1.196(b)

CAMERON WEIFFENBACH	)
Administrative Patent Judge	)
	)
	)
	) BOARD OF PATENT
JOAN ELLIS	)
Administrative Patent Judge	) APPEALS AND
	)
	) INTERFERENCES
	)
TERRY J. OWENS	)
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Application 08/013,987

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