

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(2) is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte FRANCISCUS A. PRONK,  
ARIE H. VAN HEEREN  
AND  
EELTJE A. DRAAISMA

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Appeal No. 95-1673  
Application 08/039,552<sup>1</sup>

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ON BRIEF

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Before HAIRSTON, KRASS and FLEMING, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of

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<sup>1</sup> Application for patent filed March 29, 1993. According to appellants, this application is a continuation of Application 07/686,905, filed April 17, 1991.

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claims 1 through 10, all of the claims pending in the application.

The invention pertains to a thin-film magnetic head. More particularly, in order to solve the problem of the prior art wherein resistance in the connecting tracks increases to a greater extent than the resistance in the windings, the instant invention provides for auxiliary tracks connected in parallel to, and on a different level than (i.e., above and below), the connecting tracks so as to effectively increase the cross-sections of the connecting tracks in order to lower resistance and heat developed during operation.

Independent claim 1 is reproduced as follows:

1. A thin-film magnetic head, comprising a thin film structure on a substrate, the structure comprising a flux conductor layer and first and second electrically conducting layers, which electrical conducting layers are located one above the other at separate levels, and are at least partly located between the substrate and the flux conductor layer, the first layer including a first winding having a first through-connection end, and a first connecting track as an integral extension of, and on the same level as the first winding, and having a first connecting end, and the second layer including a second winding having a second through-connection end, and a second connecting track as an integral extension of, and on the same level as the second winding and having a second connecting end, the through-connection ends being interconnected and the connecting tracks being adjacent to each other,

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characterized in that a first electrically conducting auxiliary track is located parallel to and at a different level than the second connecting track, in that one end of the first auxiliary track is connected to the second connecting track and the other end is connected to a portion of the second connecting track which is connected to the second winding, and in that a second auxiliary track is located parallel to and at a different level than the first connecting track, in that one end of the second auxiliary track is connected to the first connecting track and the other end is connected to a portion of the first connecting track connected to the first winding.

The examiner relies on the following references:

Church et al. (Church)	4,219,854	Aug. 26, 1980
Matsumoto 1987	4,672,495	June 9,
Jones Jr. et al. (Jones) 1987	4,713,711	Dec. 15,
Imanaka et al. (Imanaka)	4,949,209	Aug. 14, 1990
Koyanagi et al. (Koyanagi)	5,065,270	Nov. 12, 1991 (Filed May 13, 1990)

Claims 1 through 10 stand rejected under 35 U.S.C. § 103 as unpatentable over Imanaka in view of Koyanagi and Matsumoto. Claims 1 through 4 and 6 through 8 stand further rejected under 35 U.S.C. § 103 as unpatentable over Jones in view of Church.

Reference is made to the brief and answer for the

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respective positions of appellants and the examiner.

OPINION

Turning first to the rejection of claims 1 through 10 under 35 U.S.C. § 103 based on Imanaka, Koyanagi and Matsumoto, we will not sustain this rejection.

At page 4 of the answer, the examiner applies Imanaka to the language of independent claim 1, identifying element 111a in Imanaka as the claimed "second auxiliary track" and element 81a as the claimed "first connecting track." The examiner recognizes that Imanaka does not teach a second conducting layer and a first auxiliary track, as claimed. The examiner provides for this deficiency by citing Koyanagi for the teaching that it was well known to provide multi-layers in a thin-film magnetic head structure and by citing Imanaka's indication that Imanaka's device is applicable to thin-film magnetic heads having a coil of a multi-layer structure.

The examiner then contends that it would have been obvious to have a second conducting layer and a first auxiliary track arranged in a similar fashion as the first

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conducting layer and the second auxiliary track in Imanaka because Imanaka indicates that his invention is applicable to thin film magnetic heads having a coil of a multi-layer structure and such structures are well known in the art as taught by Koyanagi.

With regard to the claimed requirement of the connecting tracks being on the same level, the examiner relies on Matsumoto's connecting tracks 3a being on the same level as the windings 3. The examiner explains that it would have been obvious to have the connecting tracks on the same level as the windings in Imanaka as taught by Matsumoto because it "only requires an obvious repositioning of elements to acquire such an art recognized equivalent configuration..." [answer - page 6]. Further, contends the examiner, since Imanaka does not specify that the connecting tracks are at different levels from the windings, the placement of these tracks is not restricted to what is depicted in Imanaka's drawings.

First, with regard to the examiner's combination of Imanaka with Koyanagi, even if we consider the upper magnetic film 111a of Imanaka to be the claimed "second auxiliary track" and even

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if we consider element 81a to be the claimed "first connecting track," as the examiner recognizes, Imanaka simply does not show or suggest a "first auxiliary track" and a "second connecting track," as claimed. While the examiner contends that it would have been obvious to provide such in Imanaka because thin-film magnetic heads having a coil of a multi-layer structure were well known, we do not find the notoriety of multi-layer structures in a thin-film magnetic head to have been sufficient motivation to modify Imanaka as the examiner proposes in order to arrive at the instant claimed invention. Imanaka mentions "a coil of a multi-layer structure." Merely because the coil is, or may be, of a multi-level structure, we find no nexus between such a teaching and the proposed modification of Imanaka to provide for a first auxiliary track and a second connecting track, having the claimed relationship.

With regard to the claimed requirement of providing the connecting track and its corresponding winding on the same level, we find the examiner's attempt to provide for such in Imanaka merely because Matsumoto shows connecting tracks on the same level as the windings to be nothing short of

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hindsight. The references provide no reason as to why the artisan would have recognized a need to place a winding and a corresponding connecting track "on the same level," as claimed, and the examiner has not provided us with any sufficient reason. The examiner also stretches the applicability of 35 U.S.C. § 103 beyond its limits when explaining that because Imanaka fails to disclose, explicitly, that the windings and connecting tracks are not on the same level, this would lead to the conclusion that it would have been obvious to provide for windings and connecting tracks on the same level, as claimed. Without a clear indication or some suggestion by the prior art that the windings and connecting tracks are, or should be, on the same level, we find

it speculative on the part of the examiner to assume that the windings and connecting tracks are, in fact, at the same level.

Because we find no prima facie case of obviousness presented by the examiner, we will not sustain the rejection of claims 1 through 10 under 35 U.S.C. § 103 over Imanaka,

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Koyanagi and Matsumoto.

We now turn to the rejection of claims 1 through 4, and 6 through 8 under 35 U.S.C. § 103 over Jones and Church and we find that we will not sustain this rejection either because the examiner has not established the requisite prima facie case of obviousness with regard to the claimed subject matter.

At pages 6-7 of the answer, the examiner applies Jones to the claimed subject matter and notes, correctly, that Jones fails to disclose or suggest auxiliary tracks being on a different level than the connecting tracks. The examiner then relies on Church which teaches, in a magnetic thin-film environment, that by varying the width of coil turn portions such that portions furthest from the transducing gap are widest, electrical resistance effects are minimized. More particularly, the examiner concludes that, in view of Church, the skilled artisan would have

realized that the cross sectional area is the critical factor in reducing electrical resistance and improving conductivity and that an increase in height would have equally effected this increase in cross sectional area and would have thus patterned integral tracks including auxiliary tracks positioned at a different level than conducting tracks [answer-page 8].

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The examiner appears to be saying that because it was known that resistance is lowered by increasing the cross sectional area of a conductor, it would have been obvious to place an auxiliary track at a different level (above or below) than conducting tracks. If this is the examiner's reasoning, the examiner did not need the Church reference as the instant specification, itself, [at page 4] indicates that enlarging cross sections of the windings would solve the prior art problem of heat developing as a result of increased resistance as connecting tracks and windings become smaller. However, as the specification indicates, "[i]t is also very difficult to enlarge the cross-sections of the windings, as this changes the ratios between the height and the other head dimensions, which may have detrimental effects."

Thus, the problem of the prior art was known as was a solution, i.e., increase cross-sectional area of the windings. Therefore, the mere knowledge of the relationship between cross-sectional area and resistance would not, per se, have led the artisan to the solution claimed by appellants. Appellants' invention involves a very specific embodiment, through the use

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of auxiliary tracks, arranged as claimed, to effect the known larger cross-section. It is appellants, alone, who teach the provision of auxiliary tracks which are situated above and below the connecting tracks, contacting the connecting tracks, thereby effecting the desired larger cross-sectional area of the connecting tracks and decreasing resistance. Neither Jones nor Church teaches or suggests the provision of such auxiliary tracks. The conclusion of the examiner that it would have been obvious to employ such auxiliary tracks to increase the cross-sectional area could only have been reached through an improper use of hindsight, with appellants' invention in mind.

Accordingly, we will not sustain the rejection of claims 1 through 4 and 6 through 8 under 35 U.S.C. § 103 based on Jones and Church.

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The examiner's decision is reversed.

REVERSED

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
	)	
ERROL A. KRASS	)	) BOARD OF
PATENT	)	
Administrative Patent Judge	)	) APPEALS AND
	)	)
INTERFERENCES	)	
	)	
MICHAEL R. FLEMING	)	
Administrative Patent Judge	)	

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