

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MARTIJN HENRI RICHARD LANKHORST,  
JOHANNES CORNELIS NORBERTUS RIJPERS,  
HERMANUS JOHANNES BORG, and  
JOHANNES HENRICUS JOSEPHUS ROOSEN

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Appeal 2008-4618  
Application 10/117,852  
Technology Center 1700

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Decided: October 22, 2008

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Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and ROMULO H. DELMENDO, *Administrative Patent Judges*.

GARRIS, *Administrative Patent Judge*.

DECISION ON APPEAL

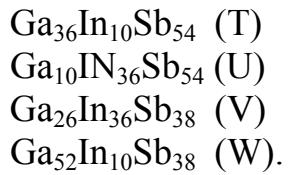
Appellants appeal under 35 U.S.C. § 134 from the Examiner's decision rejecting claims 1-20. We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM.

Appellants claim a rewritable optical data storage medium comprising a recording layer that is a phase-change material that records data by repeatedly changing of phases between amorphous phases and crystalline phases, the phase-change material having an alloy comprising Ga, In and Sb present in ratios represented by an area in a ternary phase diagram of Ga-In-Sb in atomic percentages.

Further details regarding this claimed subject matter are set forth in representative independent claim 1 which reads as follows:

1. A rewritable optical data storage medium for high-speed recording by means of a laser-light beam, said medium comprising a substrate carrying a stack of layers, which stack comprises, a first dielectric layer, a second dielectric layer, and a recording layer that is a phase-change material that records data by repeatedly changing of phases between amorphous phases and crystalline phases, the phase-change material having an alloy comprising Ga, In and Sb, said recording layer being interposed between the first dielectric layer and the second dielectric layer, wherein the ratio of Ga, In and Sb in the alloy is represented by an area in a ternary phase diagram of Ga-In-Sb in atomic percentages, said area being of quadrangular shape having the following vertices T, U, V and W:



The prior art set forth below is relied upon by the Examiner as evidence of obviousness:

Barton	4,787,077	Nov. 22, 1988
Suzuki	4,879,205	Nov. 7, 1989
Koshino	5,072,423	Dec. 10, 1991
Takada	6,007,878	Dec. 28, 1999
Nonaka	US 2001/0048993 A1	Dec. 6, 2001
Utsumi	EP 0 288 354 A2	Oct. 26, 1988

Under 35 U.S.C. § 103(a):

claims 1, 2, and 9 are rejected over Koshino and Utsumi;

claims 1, 2, and 9 are alternatively rejected over Koshino, Utsumi, and Barton;

claims 1-4, 9, 12-14, and 19 are rejected over Koshino, Utsumi, and Suzuki;

claims 1-20 are rejected over Koshino, Utsumi, Suzuki, and Nonaka;

claims 1-4, 9, and 12-14 are rejected over Koshino, Utsumi, Suzuki, and Takada; and

claims 1-20 are rejected over Koshino, Utsumi, Suzuki, Nonaka, and Takada.

The issue presented by this appeal relates to the requirement that the claimed Ga-In-Sb alloy recording layer "records data by repeatedly changing of phases between amorphous phases and crystalline phases" (claim 1).

The Examiner finds (1) that Koshino discloses a rewritable optical data storage medium having a recording layer which is described in Examples 5 and 24 as a Ga-In-Sb alloy and (2) that this alloy falls within the range of alloys claimed by Appellants (Ans., para. bridging 4-5). In this regard, the Examiner additionally finds that the Ga-In-Sb alloys of Koshino's Examples 5 and 24 inherently possess the ability to perform the claim 1 function "records data by repeatedly changing of phases between amorphous phases and crystalline phases" (Ans. 11, third full sentence; *see also* Ans. 4 and Supp. Ans. 4-5).

While Koshino may not disclose that the recording layer is interposed between first and second dielectric layers as required by claim 1, the

Examiner finds that Utsumi teaches interposing a recording layer, which may be a Ga-In-Sb alloy, between protective (i.e., dielectric) layers (Ans. 5, first full para.). Based on these findings the Examiner concludes that it would have been obvious for one with ordinary skill in this art to combine the teachings of Koshino and Utsumi such that the Ga-In-Sb recording layer alloys of Koshino's Examples 5 and 24 are interposed between protective (i.e., dielectric) layers as taught by Utsumi (Ans., para. bridging pages 5-6).

All of Appellants' arguments for patentability relate to the requirement that the Ga-In-Sb alloy recording layer "records data by repeatedly changing of phases between amorphous phases and crystalline phases" (claim 1).<sup>1</sup> Most of these arguments are not relevant to the Examiner's unpatentability position. For example, Appellants argue that it would not have been obvious "to use amorphous to crystalline transitions to store data [in Koshino because] *Koshino et al.* teach away from using amorphous to crystalline transitions to store data (see col. 2, line 49-col. 3, line 12)" (App. Br. 8). As explained above, however, the Examiner regards the claim feature under consideration as unpatentable based upon a theory of inherency not obviousness. Appellants acknowledge the Examiner's inherency position and attempt to refute it by again pointing out that the "*Koshino et al.* teach away from using a recording layer that is a phase-change material that

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<sup>1</sup> Appellants allege that the Examiner's rejection of claim 12 "is silent towards" the requirements concerning first and second dielectric layers and their thicknesses (App. Br. 26). However, this allegation merely points out what claim 12 recites and therefore is not considered an argument within the meaning of 37 C.F.R. § 41.37 (c)(1)(vii). Moreover, the allegation is factually erroneous. These claim 12 requirements have been expressly addressed by the Examiner (Ans. 7, first full para.).

records data by repeatedly changing of phases between amorphous phases and crystalline phases) (Reply Br., filed Dec. 17, 2007, 3).

The record before us establishes a *prima facie* case for the Examiner's inherency position which has not been successfully rebutted by Appellants' arguments.

A *prima facie* case of inherency requires a basis in fact and/or technical reasoning to reasonably support a determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1463-64 (BPAI 1990).

The Examiner proffers a number of facts and technical reasoning in support of an inherency determination. The strongest evidence of inherency is the Examiner's previously discussed finding of fact that the Ga-In-Sb alloy recording layers of Koshino's Examples 5 and 24 are identical to the recording layer alloys encompassed the appealed claims. Significantly, this finding has not been disputed by Appellants in the record of this appeal. This undisputed finding establishes a *prima facie* case of inherency based on the well-established principle that, from the standpoint of patent law, a compound and all of its properties are inseparable; they are one and the same thing. *In re Papesch*, 315 F.2d 381, 391 (CCPA 1963). Therefore, because the recording layer alloys of Koshino's Examples 5 and 24 are identical to those encompassed by the appealed claims, the prior art alloys necessarily possess the same properties as the claimed alloys including the required property that the claimed alloy material "records data by repeatedly changing of phases between amorphous phases and crystalline phases" (claim 1).

Contrary to Appellants' argument, the fact that Koshino teaches recording data by crystalline-to-crystalline changes (col. 3, ll. 1-12) in no way proves that Koshino's Examples 5 and 24 alloys are incapable of recording data by amorphous-to-crystalline changes as required by the appealed claims. Instead, this teaching merely reflects the crystalline-to-crystalline recording mechanism chosen by Koshino as desirable. On the other hand, it is undisputed that Koshino's Examples 5 and 24 alloys are included among those claimed by Appellants, and therefore, these prior art alloys must necessarily possess the capability of recording data by amorphous-to-crystalline phase changes when subjected to the laser-light beam recording conditions disclosed by Appellants.

Where, as here, the claimed and prior art products are identical or substantially identical, or are produced by identical or substantially identical processes, the Patent and Trademark Office can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of the claimed product. *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977). Whether the rejection is based on "inherency" under 35 U.S.C. § 102, on "prima facie obviousness" under 35 U.S.C. § 103, jointly or alternatively, the burden of proof is the same, and its fairness is evidenced by the inability of the Patent and Trademark Office to obtain and compare the claimed and prior art products. *Id.*

On this record, Appellants have failed to carry their burden of proving that the Ga-In-Sb alloy products of Koshino's Examples 5 and 24 do not necessarily or inherently possess the claimed product characteristic of recording data by repeatedly changing of phases between amorphous phases

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and crystalline phases. Accordingly, we sustain each of the § 103 rejections advanced by the Examiner in this appeal.

The decision of the Examiner is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

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