

The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JATHAN D. EDWARDS, WILLIAM C. MITCHELL and MARK A. ARPS

Appeal No. 2000-1244
Application 08/826,111

ON BRIEF

Before THOMAS, FLEMING, and BARRY, **Administrative Patent Judges**.
FLEMING, **Administrative Patent Judge**.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1 through 3, 5 through 20 and 22 through 32, all the claims pending in the instant application. Claims 4 and 21 have been canceled.

The invention relates to the area of optical media which employs two or more information storage layers. In the field of prerecorded optical discs, such as compact discs and video discs,

increased storage capacity is usually achieved by increasing the storage density per unit area of the disc. See page 1 of Appellants' specification. An alternate method for increasing the capacity of an optical disc is to employ additional storage layers on a disc which can be independently recorded or reproduced. Accordingly, the Appellants' invention is directed to an optical storage medium having a partially reflective layer and a highly reflective layer, whereby data/servo information/format information may be stored on two different layers of the medium. See page 2 of Appellants specification.

An optical data storage system 10 according to Appellants' invention is shown in figure 1. Optical storage medium 12 comprises a transparent substrate 14, a partially reflective thin film layer 16 on a data pit pattern 15, a transparent spacer layer 18, and a highly reflective thin film layer 20 on or adjacent to a second pit pattern 19. See page 4 of Appellants' specification.

Appellants have discovered that an excellent material for partially reflective layer 16 is amorphous selenium. As shown in figure 2, the refractive index of amorphous selenium has a high real component (n) over a range of wavelengths (λ) from 400 to 900 nm. A high real component n is required so that partially

reflective layer 16 has greater than 25% reflectivity at the wavelength of interest. See page 7 of Appellants' specification.

As shown in figure 3, the refractive index of amorphous selenium also has a very low imaginary component (K) over a range of wavelengths from 600 to 800 nm. A low K is necessary to allow the double transmission of light through partially reflective layer 16 without significant loss to enable readout of highly reflective layer 20. See page 7 of Appellants' specification.

Independent claim 1 present in the application is produced as follows:

1. An optical storage medium from storing information in at least two separate layers, the medium comprising, in order:

a transparent substrate having a pattern of pits in one major surface thereof;

a partially reflective layer, adjacent the substrate, comprising amorphous selenium;

a transparent spacer layer; and

a highly reflective layer;

wherein the medium is designed for use with a focused laser beam having a wavelength λ positioned to enter the medium through the substrate, wherein the beam may be adjusted to be focused on each of the partially reflective layer and the highly reflective layer, and further wherein the partially reflective layer has a thickness within $\pm 10\% \lambda/4n_\lambda$, where the partially reflective layer has an index of refraction having a real component (n) having a value measured at λ of n_λ .

Appeal No. 2000-1244
Application 08/826,111

References

The references relied on by the Examiner are as follows:

Utsumi et al. (Utsumi)	5,492,783	Feb. 20, 1996
Hintz	5,679,429	Oct. 21, 1997
	(filing date	Jun. 7, 1996)
Best et al. (Best)	EP 0 517 490 A2	Dec. 9, 1992

Rejection at Issue

Claims 1 through 3, 5 through 8, 10 through 20 and 22 through 32 stand rejected under 35 U.S.C. § 103 as being unpatentable over Hintz in view of Utsumi.

Claim 9 stands rejected under 35 U.S.C. § 103 as being unpatentable over Hintz in view of Utsumi and Best.

Rather than repeat the arguments of Appellants or the Examiner, we make reference to the briefs¹ and answer for the respective details thereof.

OPINION

With full consideration being given to the subject matter on appeal, the Examiner's rejections and arguments of Appellants and the Examiner, for the reasons stated *infra*, we reverse the

¹ Appellants filed an appeal brief on April 23, 1999. Appellants filed a reply brief on September 10, 1999. The Examiner mailed out an office communication on December 14, 1999 stating that the reply brief has been entered and considered.

Appeal No. 2000-1244
Application 08/826,111

Examiner's rejection of claims 1 through 3, 5 through 20 and 22 through 32.

Appellants point out that each claim on appeal requires the use of amorphous selenium in a partially reflective layer having specified dimensions or a particular index of refraction, in combination with a substrate, a spacer layer and a highly reflective layer. Appellants argue that the cited references are entirely vacant of any suggestion or motivation to combine the various references, so as to use amorphous selenium in a partially reflective layer. Appellants argue that the Examiner cites no such suggestion or motivation, but simply uses the application as a template to assemble the disparate prior art elements. See page 6 of Appellants' brief.

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a **prima facie** case of obviousness. **In re Oetiker**, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). **See also In re Piasecki**, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The Examiner can satisfy this burden by showing that some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art suggests the claimed subject matter. **In re**

Appeal No. 2000-1244
Application 08/826,111

Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

Only if this initial burden is met does the burden of coming forward with evidence or argument shift to the Appellants.

Oetiker, 977 F.2d at 1445, 24 USPQ2d at 1444. **See also Piasecki**, 745 F.2d at 1472, 223 USPQ at 788.

An obviousness analysis commences with a review and consideration of all the pertinent evidence and arguments. "In reviewing the [E]xaminer's decision on appeal, the Board must necessarily weigh all of the evidence and arguments." **Oetiker**, 977 F.2d at 1445, 24 USPQ2d at 1444. "[T]he Board must not only assure that the requisite findings are made, based on evidence of record, but must also explain the reasoning by which the findings are deemed to support the agency's conclusion." **In re Lee**, 277 F.3d 1338, 1344, 61 USPQ2d 1430, 1434 (Fed. Cir. 2002).

When determining obviousness, "[t]he factual inquiry whether to combine references must be thorough and searching." **Lee**, 277 F.3d at 1343, 61 USPQ2d at 1433, **citing McGinley v. Franklin Sports, Inc.**, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). "It must be based on objective evidence of record." **Id.** "Broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence.'" **In re**

Appeal No. 2000-1244
Application 08/826,111

Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617. "Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact." **Dembiczak**, 175 F.3d at 999, 50 USPQ2d at 1617, **citing McElmurry v. Arkansas Power & Light Co.**, 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993).

The Federal Circuit states that, "[t]he mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." **In re Fritch**, 972 F.2d 1260, 1266 n.14, 23 USPQ2d 1780, 1783-84 n.14 (Fed. Cir. 1992), **citing In re Gordon**, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). In addition, our reviewing court stated in **In re Lee**, 277 F.3d 1338, 1343, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002), that when making an obviousness rejection based on combination, "there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by Applicant" (quoting **In re Dance**, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998)).

In the rejection of claims 1 through 3, 5 through 8, 10 through 20 and 22 through 32 as being unpatentable over Hintz in view of Utsumi, the Examiner relies on Hintz for all the teachings except for the use of amorphous selenium in a partially reflective layer. See pages 3 and 4 of the Examiner's answer. For the teaching of amorphous selenium, the Examiner relies on Utsumi. See page 5 of the Examiner's answer.

In the reply brief, Appellants argue that the Examiner's answer is premised on a fundamental misunderstanding of the Utsumi reference. Appellants argue that Utsumi is specifically and clearly directed only to an electrostatic medium, not to an optical medium. In Utsumi, amorphous selenium and other similar materials are simply provided as "photoconductive or electrically conductive materials in order to stabilize charges carried thereby." Appellants point us to column 9, lines 6 through 15, of Utsumi.

Appellants also argue that Utsumi suggests that amorphous selenium has favorable electrostatic properties so as to stabilize charges carried thereby. Appellants argue that Utsumi does not begin to suggest any optical properties (e.g., reflectivity and transparency,) that amorphous selenium might have, let alone how such optical properties could be used as

advantageously to end the optical storage medium or why these properties would be desirable.

Upon our review of Utsumi, we find that Utsumi is related to an electrostatic information-recording medium which can electrostatically record information by an exposure process with the application of voltage or other processes and reproduce the information at any desired time. See column 1, lines 14 through 22, of Utsumi. Utsumi teaches by referencing figures 1 and 2 an electrostatic information-recording medium having a charge-retaining layer 11, a resin layer having a low glass transition temperature 11a a heat-resistant, non-photoconductive insulating layer 11b, an electrode 13 and a support 15. See column 6, lines 55 through 67. Utsumi teaches that there are various materials that are suitable for making the resin layer. Among many of these materials, Utsumi teaches that the resin layer could be made of amorphous selenium. See column 9, lines 6 through 31 of Utsumi. Utsumi teaches that the resin layer is made of amorphous selenium as well as other materials for their properties of providing photoconductive or electrically conductive material in order to stabilize charges carried thereby. **Id.**

Turning to Hintz, we find that Hintz teaches a dual layer optical medium having partially reflective thin layer. In particular, we find that Hintz teaches in figure 1a that an optical storage medium 12 comprises a transparent substrate 14, a partially reflective thin film layer 16 on a first data pit pattern 15, a transparent spacer layer 18, and a highly reflective thin film layer 20 on a second data pit pattern 19. See column 2, line 60, through column 3, line 2, of Hintz. Upon our review of Hintz, we find no suggestion of using amorphous selenium or a recognition of its optical properties.

Upon our review of Hintz and Utsumi, we fail to find the either reference teaches or appreciates the optical properties of amorphous selenium. Therefore, we find that the Examiner has not met the initial burden of coming forward with evidence that would show that those skilled in the art would have reasons for making the Examiner's proposed modification.

Turning to the rejection of claim 9 as being unpatentable over Hintz in view of Utsumi and further in view of Best, we note that the Examiner relies on Best only for the teaching of sputtering as a process known in the art for depositing films. See page 6 of the Examiner's answer. Therefore, Best is not relied on for providing any substantial evidence as to why one of

Appeal No. 2000-1244
Application 08/826,111

ordinary skill in the art would make the Examiner's proposed modification of using amorphous selenium as a material for the Hintz partially reflective layer.

In view of the forgoing, we have not sustained the Examiner's rejection of claims 1 through 3, 5 through 20 and 22 through 32 under 35 U.S.C. § 103.

REVERSED

JAMES D. THOMAS)	
Administrative Patent Judge)	
)	
)	
)	BOARD OF PATENT
MICHAEL R. FLEMING)	
Administrative Patent Judge)	APPEALS AND
)	
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Appeal No. 2000-1244
Application 08/826,111

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