



US007391700B2

(12) **United States Patent**  
**Stallinga**

(10) **Patent No.:** **US 7,391,700 B2**  
(45) **Date of Patent:** **Jun. 24, 2008**

(54) **OPTICAL STORAGE IN DISCS HAVING  
MULTIPLE DATA LAYERS**

(75) Inventor: **Sjoerd Stallinga**, Eindhoven (NL)

(73) Assignee: **Koninklijke Philips Electronics N.V.**,  
Eindhoven (NL)

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 234 days.

(21) Appl. No.: **10/577,898**

(22) PCT Filed: **Oct. 26, 2004**

(86) PCT No.: **PCT/IB2004/003526**

§ 371 (c)(1),  
(2), (4) Date: **May 1, 2006**

(87) PCT Pub. No.: **WO2005/043513**

PCT Pub. Date: **May 12, 2005**

(65) **Prior Publication Data**

US 2007/0109941 A1 May 17, 2007

(30) **Foreign Application Priority Data**

Nov. 4, 2003 (EP) ..... 03300196

(51) **Int. Cl.**  
**G1B 3/74** (2006.01)

(52) **U.S. Cl.** ..... 369/94; 369/112.02

(58) **Field of Classification Search** .....  
369/112.01–112.08, 275.1, 275.2, 275.3,  
369/275.4, 275.5, 94, 286; 428/64.4, 817,  
428/913

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,202,875 A \* 4/1993 Rosen et al. .... 369/94  
5,255,262 A \* 10/1993 Best et al. .... 369/275.1  
6,385,157 B1 \* 5/2002 Nakano ..... 369/112.02  
7,082,093 B1 \* 7/2006 Magnitskii et al. .... 369/94

\* cited by examiner

*Primary Examiner*—Ali Neyzari

(74) *Attorney, Agent, or Firm*—Michael E. Belk

(57) **ABSTRACT**

Optical pick-up apparatus for retrieving data stored on an optical storage disc having a plurality of record layers (6, 7), the radiation beam reflected back from the disc when a first layer (7) is irradiated comprising radiation reflected back from the first layer (7) and radiation reflected back from one or more of the other layers(6). A spatial filter (8) is provided which is arranged and configured to spatially filter the radiation beam so as to cause the radiation reflected by the first record layer (7) and the radiation reflected by any of the other record layers (6) of the optical storage disc to be spatially separated, such that at least a substantial portion of the radiation reflected back from the other layers (6) can be selectively eliminated from the radiation beam prior to retrieval therefrom of the data.

**10 Claims, 3 Drawing Sheets**















