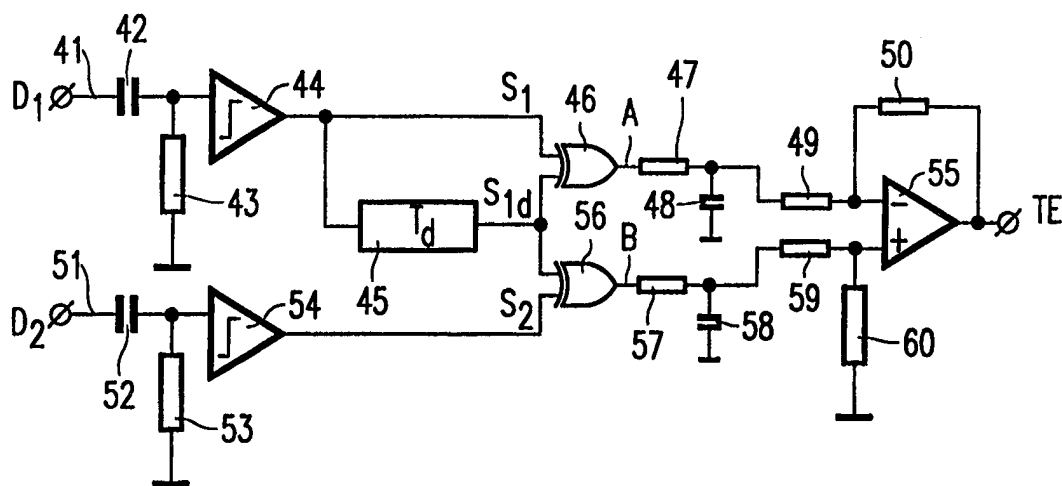




## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/IB98/00481 (22) International Filing Date: 2 April 1998 (02.04.98) (30) Priority Data: 97201244.7 25 April 1997 (25.04.97) EP (34) Countries for which the regional or international application was filed: NL et al. (71) Applicant: KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL). (71) Applicant (for SE only): PHILIPS AB [SE/SE]; Kottbygatan 7, Kista, S-164 85 Stockholm (SE). (72) Inventors: BAKX, Johannes, Leopoldus; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). DEKKER, Anthonius, Leonardus, Johannes; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). (74) Agent: FAESSEN, Louis, M., H.; Internationaal Octrooibureau B.V., P.O. Box 220, NL-5600 AE Eindhoven (NL).</p>		<p>(81) Designated States: CN, JP, KR, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). <b>Published</b> <i>With international search report.</i> (88) Date of publication of the international search report: 4 February 1999 (04.02.99)</p>

(54) Title: APPARATUS AND DETECTION UNIT FOR SCANNING AN OPTICALLY READABLE RECORD CARRIER



## (57) Abstract

A description is given of an apparatus and a detection unit for scanning an optically readable record carrier (1), in which a light beam modulated by the information marks in a track on the record carrier is incident on the detection unit (15) comprising four detectors. A reliable tracking error signal based on time differences between detector signals is obtained for high-density recording by comparing digitized signals of the detectors with a delayed signal  $T_d$  generated by delay unit (45) based on the digitized signals. The time differences between the detector signals result in length differences between pulses in the comparing signals A and B, which pulses have a nominal length of  $T_d$ . The comparing signals A and B are low-pass filtered and combined to generate the tracking error signal TE.

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB 98/00481

## A. CLASSIFICATION OF SUBJECT MATTER

**IPC6: G11B 7/09**

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

**IPC6: G11B**

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

**SE,DK,FI,NO classes as above**

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0458319 A2 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.), 27 November 1991 (27.11.91), column 6, line 3 - column 7, line 4, see"summary of the invention" --	1-7
Y	EP 0343952 A2 (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.), 29 November 1989 (29.11.89), column 4, line 44 - column 5, line 51; column 8, line 4 - line 35; column 11, line 42 - column 2, line 22, see"summary of the invention" --	1-7
A	Patent Abstracts of Japan, abstract of JP 60-256945 A (MATSUSHITA DENKI SANGYO KK), 18 December 1985 (18.12.85) --	1-7

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Date of the actual completion of the international search

**17 November 1998**

Date of mailing of the international search report

**20 - 11 - 1998**

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4812726 A (TOSHIHIKO BENII ET AL), 14 March 1989 (14.03.89), see "summary of the invention"  --	1-7
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Information on patent family members

International application No.

PCT/IB 98/00481

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