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Bezeichnung der Erfindung:
Title of invention:
Titre de l'invention : Method and apparatus for controlling the reading of information from an information storage medium

Klassifikation / Classification / Classement : G11B 7/00

ENTSCHEIDUNG / DECISION

vom / of / du 19 June 1989

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet : Discovision Associates

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56 EPC

Schlagwort / Keyword / Mot clé : "Inventive step (yes) - unobvious combination"

Leitsatz / Headnote / Sommaire

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Case Number : T 135/86 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal
of 19 June 1989

Appellant : (Proprietor of the patent)
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Decision under appeal : Decision of Opposition Division of the European Patent Office given orally on 15 November 1985 and notified in writing on 25 February 1986 revoking European patent No. 0 007 200 pursuant to Article 102(1) EPC.

Composition of the Board :

Chairman : W.B. Oettinger
Members : J.A.H. van Voorthuizen
G.D. Paterson

Summary of Facts and Submissions

I. The Appellant is the proprietor of European patent No. 7200, based on patent application No. 79 301 242.8 filed on 27 June 1979 claiming a priority of 30 June 1978.

The patent acknowledged DE-A-2 521 821 (hereinafter referred to as D0) as prior art and contained three independent claims directed to an information storage medium having an information track (Claim 1), to a method for reading information from an information track on a storage medium (Claim 5), and to an information recovery apparatus for reading information from an information storage medium as claimed in Claim 1 (Claim 12), respectively, each followed by a series of dependent claims.

II. Following an admissible opposition, the Opposition Division of the European Patent Office revoked the patent at the conclusion of oral proceedings, held on 15 November 1985, for the reason that Claim 1, filed on 7 January 1985 and directed to a method of reading information from an information track, lacked an inventive step, having regard to the following prior art documents:

(D1) IEEE Transactions on Consumer Electronics, November 1976, pages 309 to 317

(D3) DE-A-2 529 327

(D8a) Proceedings of the Sixth Symposium on Incremental Motion Control Systems and Devices, Illinois, May 24-27, 1977, pages 237 to 242

(D8b) ditto , pages 243 to 244.

III. In a reasoned decision, dated 25 February 1986, the same conclusion was drawn for independent Claim 5, filed on 7 January 1985 and amended on 15 November 1985, directed to an information recovery apparatus.

Further, the dependent Claims 2-4 (method) and 6-9 (apparatus) were likewise held not to contain patentable subject-matter.

In addition to the aforementioned prior art documents, reference was made to:

(D2) Journal of the SMPTE, July 1974, pages 580 to 582

(D4) US-A-4 097 730

(D6) US-A-3 976 828.

No important role was attributed to the Opponent's following citations:

(D5) US-A-3 893 163

(D7) US-A-3 580 990.

IV. On 24 April 1986, the proprietor of the patent lodged an appeal, referring to the decision dated 25 February 1986 and having paid the appeal fee two days before.

On 30 June 1986, the Appellant filed a statement of grounds of appeal contesting the Opposition Division's view.

V. The Appellant's main arguments are:

- The pilot signal used, according to the claimed invention, for controlling the rotation speed of the motor driving the information storage medium has to be recoverable from the read information, even if the light beam reading the information is misfocused or covers more than one turn of the track. This object is not addressed by any of the prior art documents.

- The features used for achieving this object are not therefore obvious.

- The claimed invention makes use of several additional features which may individually be known per se but their selection was unobvious.

VI. In response to that, the Respondent expressed his view that the appealed decision was clearly correct but he did not go into details on the Appellant's arguments.

On 17 February 1988, he withdrew his opposition.

VII. In response to communications from the Board, which raised a number of formal objections against the patent documents on file, the Appellant filed an amended drawing and an amended description and claims on 17 November 1988 and 21 May 1989 respectively.

The independent claims read as follows:

"1. Information recovery apparatus, including

(1) a motor (17) for providing relative rotation between

(a) an information storage medium (11) having an information track (15) arranged in a number of spiral or concentric turns, the information track including information signals in a frequency varying format summed with a pilot signal having a constant frequency substantially lower than the lowest frequency of the information signals and a phase angle which is aligned with itself on adjacent turns of the track on the medium and

(b) a reader of information including a source of a beam of light and means for focusing the beam to a spot on the medium,

(2) means for extracting the pilot signal from information read by the reader, and

(3) a control responsive to the pilot signal, characterised in that the means for focusing the beam to a spot on the medium is such as to focus the beam to an extent that the intensity of the reflected beam is modulated at least at the frequency of the pilot signal even when the focus of the beam is such that information signals cannot be resolved, and when the frequency varying information cannot be decoded because the intensity of the reflected beam is simultaneously modulated by a plurality of turns of the track,

and in that the control includes means (33, 35) for producing a reference signal representative of the desired speed of a medium; a filter (27, 55, 63, 61, 29) for extracting the pilot signal from the information read by the reader; a comparator (37) for comparing the phase of the reference signal with that of the pilot signal to produce a first motor driver signal (51) for controlling the motor; means (69) for measuring the back-emf developed by the motor; means (71) for comparing the measured back-emf with a predetermined level (75) for producing a second driver signal (77) to adjust the speed of the motor; and means (49) responsive (81) to the difference between the actual and the desired speed of the motor decreasing below a predetermined threshold for enabling the first motor driver signal then to be effective to adjust the motor speed.

6. A method of reading information from an information track (15) arranged in a number of spiral, or concentric circular turns on a storage medium (11), the information track including information signals in a frequency varying format summed with a pilot signal having a constant frequency substantially lower than the lowest frequency of the information signal and a phase angle which is aligned with itself on adjacent turns of the track, characterised in that the method is carried out using apparatus (17, 27 etc.) as claimed in any one of the preceding claims."

Claims 2-5 refer back to, and are fully dependent upon, Claim 1.

VIII. It follows from the statement of grounds of appeal, and from the Appellant's other submissions, that he requests that the decision under appeal be set aside and the patent

maintained as amended on the basis of the description and claims filed on 21 May 1989 and the drawing filed on 17 November 1988.

Reasons for the Decision

1. The appeal complies with Articles 106-108 EPC.

Further, Rule 64 EPC has been met insofar as it is clear from the notice of appeal that cancellation of the decision under appeal in its entirety is requested.

The appeal is, therefore, admissible.

2. The Patentee's appeal against the decision to revoke his patent and his request to set aside that decision are not affected by the Respondent having withdrawn his opposition, and a decision under Article 111(1) EPC is still required.

3. Claim 1 is based on apparatus Claim 15 as appended to Claim 13 as published, referring back, via Claim 12, to medium Claims 1 and 2, with further features taken from other dependent claims and some of them further specified as disclosed in the description, in particular column 5, lines 39-52.

Claims 2-5 are based on published Claims 14, 17, 16 and 18 respectively.

Independent Claim 6 is based on method Claim 10 as appended to Claim 7 as appended to Claim 5 as published, with further features taken from other claims dependent upon Claim 5.

The amendments made to the claims are therefore admissible under Article 123(3) EPC.

4. The amended patent documents meet also the other formal requirements of the Convention, in particular:

4.1 As appears from the description, Claim 1 has been partitioned according to Rule 29(1) EPC with regard to D3 as the prior art coming, in the opinion of the Appellant, closest to the claimed invention.

Although a different kind of partitioning, in particular with regard to D0 or D1, would have appeared possible, the chosen partitioning cannot be said to be inappropriate and is not, moreover, of importance for the issue to be decided whether the subject-matter of Claim 1, as a combination, is patentable.

4.2 Claim 6 meets the lack of clarity objection raised by the Board against method Claim 1, filed on 7 January 1985, in that it brings out clearly that it is, in effect, a use claim.

4.3 The description has been amended to comply with Rule 27(1)(c) and (d) EPC.

4.4 The drawing now contains the catchwords indispensible for its understanding (Rule 32(2)(j) EPC).

5. It is not at issue that the apparatus claimed in Claim 1 is new against each of the prior art documents on file.

6. The issue remaining to be decided is whether the subject-matter of Claim 1 involves an inventive step.

In the opinion of the Board this is indeed the case and maintenance of the patent on the basis of this claim is therefore possible.

This conclusion is based, in essence, on the following considerations:

6.1 Starting out from the requirement that the motor rotating the information storage medium must be controlled so as to provide for a constant angular speed of that medium, D3 discloses a disc rotation servo motor loop using a tachometer and comparing its output signal frequency and phase with those of a reference signal of fixed frequency.

The disclosure of D2 is similar to that of D3.

6.2 From D8b it is known to replace, in a motor servo, a tachometer signal by a back-emf signal.

This disclosure has been made with particular reference to incremental motion control in general and preferably but not exclusively for microfilming moving documents (D8a).

6.3 However, there is no hint in D3 or D2, and no incentive from D8, that instead of, or additionally to, the regulation of the motor speed with respect to a constant reference value, the motor rotation speed could, or should, be controlled by a speed-dependent signal read from the disc.

6.4 D3 and D2 disclose an additional control loop using a speed-dependent signal read from the disc, but this is a separate control loop compensating for any deviations of the track on the disc, caused for instance by

excentricities, from its correct tangential speed by regulating the tangential position of the read beam with the aid of a movable mirror in the beam path.

It cannot be derived from these documents that this compensation of tangential speed deviations could be effectively performed, instead, by additional measures in the motor control loop.

6.5 A motor control loop using a signal read from the disc is, on the other hand, known from D0 and D1. In these cases, however, the signal read from the disc is constituted by synchronisation pulses contained in the video signal.

There is no hint to use any other periodical signal instead for controlling the motor speed.

6.6 In the context of the tangential mirror movement control servo, D3 and D2 disclose in addition that a low frequency CW pilot signal recorded on the disc may be used as an "easier" alternative to the video synchronisation pulses.

6.7 Document D4, which is concerned with a focus correction system in a disc player, also proposes the use of a CW pilot signal having a constant frequency substantially lower than the lowest frequency of the information signals and a phase angle which is aligned with itself on adjacent turns of the track on the medium. D4 states that this phase alignment has the required advantage that detection of the recorded pilot signal is ensured even during out-of-focus conditions when the read beam spans more than one turn of the track. This advantage allows the focus of the read beam to be controlled even if the information to be read cannot be resolved or decoded due to the amount of misfocusing or misalignment.

6.8 The claimed invention aims at ensuring motor speed control in the case of a similar out-of-focus condition. It has to be considered, however, that the motor speed control, the tangential mirror control and the focus control in a video disc player necessarily have quite different characteristics in respect of range and speed of response. Furthermore, even if comparing CW signal phases may be equivalent to comparing pulse signal times in the case of tangential mirror control it is not a priori evident that the same equivalence would apply in the case of a motor speed control.

6.9 None of the other prior art documents on file, D5-D7, is relevant enough to have to be considered in detail.

6.10 For all these reasons, the Board concludes that the specific combination of interrelated features defined in Claim 1 could not be derived by the skilled person in an obvious manner from the multiplicity of individual pieces of prior art as disclosed in the documents cited above (paragraphs 6.1, 6.2, 6.4, 6.5, 6.6 and 6.7). This claim is therefore held allowable.

7. The claimed apparatus being, for these reasons, patentable, the same applies to its use claimed in Claim 6.

8. As a consequence, the dependent claims are also unobjectionable.

Only an obvious clerical error in Claim 4, concerning the reference numeral, requires a correction.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent as amended on the basis of the following documents:

- Description columns 1, 1A, 1B and 2-9 filed on 21 May 1989;

- Claims 1-6 filed on 21 May 1989 under the proviso that reference numeral 3 in Claim 4 is corrected to read "30";

- Drawings, one sheet, filed on 17 November 1988.

The Registrar: The Chairman

S. Fabiani

S. Fabiani W.B. Oettinger

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