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D E C I S I O N
of 27 July 2004

Case Number: T 0366/01 - 3.5.3

Application Number: 91310364.4

Publication Number: 0485234

IPC: G11B 20/10

Language of the proceedings: EN

Title of invention:

Information recording and reproducing device

Patentee:

SHARP KABUSHIKI KAISHA

Opponent:

Koninklijke Philips Electronics N.V.

Headword:

Information recording and reproducing device/SHARP

Relevant legal provisions:

EPC Art. 52(1), 54(1),(2), 56

Keyword:

"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:

-

Catchword:

-



Case Number: T 0366/01 - 3.5.3

D E C I S I O N
of the Technical Board of Appeal 3.5.3
of 27 July 2004

Appellant: Koninklijke Philips Electronics N.V.
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
17 January 2001 concerning maintenance of
European patent No. 0485234 in amended form.

Composition of the Board:

Chairman: A. S. Clelland
Members: A. J. Madenach
R. T. Menapace

Summary of Facts and Submissions

I. This is an appeal against an interlocutory decision by the opposition division, posted on 17 January 2001, that European Patent No. 0 485 234 in amended form met the requirements of the EPC.

II. The opposition was on the grounds of lack of novelty and lack of inventive step.

The following documents cited in the course of the opposition proceedings are relevant for this decision:

E1: US-A-4 811 317

E7: US-A-4 819 218

III. Notice of appeal was filed on 22 March 2001 by the opponent. The corresponding grounds of appeal were filed on 21 May 2001. The appellant requested that the appealed decision be set aside and the patent be revoked. As an auxiliary measure oral proceedings were requested.

IV. In his reply filed on 14 November 2001, the respondent (patentee) requested that the appeal be dismissed. As a first auxiliary measure it was requested to set the appealed decision aside and to maintain the patent on the basis of a first auxiliary request or, failing that, on the basis of a second auxiliary request, both filed on 14 November 2000 during the opposition procedure. As a further auxiliary measure, it was requested to arrange oral proceedings if the main request could not be allowed.

- V. With a communication of 6 April 2004, the parties were summoned to oral proceedings scheduled for 27 July 2004. In an annex to the summons, the Board summarized its preliminary position with regard to the question of novelty and inventive step.

- VI. With letter of 29 June 2004, the appellant informed the Board that it would not attend the scheduled oral proceedings and asked that the appeal proceedings be continued on the basis of the written submissions, which the Board interpreted as meaning that the existing requests were maintained (see point III above).

- VII. Oral proceedings took place on 27 July 2004. The respondent confirmed its previous requests (see point IV above).

- VIII. Independent claims 1, 10, 16 and 18 according to the main request read as follows:

Claim 1:

"An information recording device adapted for use with a recording medium whereon pre-recorded information is formed, the pre-recorded information including control information for controlling the relative motion between a recording head and a track of the recording medium at a constant linear velocity, the device comprising first recording clock generation means for generating a first recording clock having a clock frequency based on the pre-recorded information detected at the location of the recording head on the recording medium, and control means for controlling the recording by said recording

head of information on the recording medium using said first recording clock, characterised in that said control means is operable, when there is a change in the position of the recording head relative to the recording medium necessitating a speed change of said recording medium, to use said first recording clock to record information on the recording medium at a desired new location thereof when the recording head has reached said new location without waiting for said clock frequency to attain a value corresponding to said new location of the medium having obtained said constant linear velocity."

Claim 10:

"An information reproducing device adapted for use with a recording medium whereon pre-recorded information is formed, the pre-recorded information including control information for controlling the relative motion between a reproducing head and a track of the recording medium at a constant linear velocity, the device comprising first reading clock generation means for generating a first reading clock having a clock frequency based on the pre-recorded information detected by the reproducing head at the location of said reproducing head on the recording medium, and control means for controlling the reading using said first reading clock of information reproduced from the recording medium and stored in memory means, characterised in that said control means is operable when there is a change in the position of the reproducing head relative to the recording medium necessitating a speed change of the recording medium, to use said first reading clock to read information reproduced from a desired new location

of the recording medium when the reproducing head has reached said new location, without waiting for said clock frequency to attain a value corresponding to said new location of the medium having obtained said constant linear velocity."

Claim 16:

"A method of recording information on a recording medium whereon pre-recorded information is formed, the pre-recorded information including control information for controlling the relative motion between a recording head and a track of the recording medium at a constant linear velocity, the method including generating a first recording clock, for use in recording information, having a frequency based on the pre-recorded information detected at the location of the recording head on the recording medium, characterised in that when there is a change in the position of the recording head relative to the recording medium necessitating a speed change of said recording medium said first recording clock is used to record information on the recording medium at a desired new location thereof when the recording head has reached said new location without waiting for said clock frequency to attain a value corresponding to said new location of the medium having obtained said constant linear velocity."

Claim 18:

"A method of reproducing information from a recording medium whereon pre-recorded information is formed, the pre-recorded information including control information

for controlling the relative motion between a reproducing head and a track of the recording medium at a constant linear velocity, the method comprising generating a first reading clock, for use in reading information reproduced from the recording medium and stored in memory, the first reading clock having a frequency based on the pre-recorded information detected by the reproducing head at the location of said reproducing head on the recording medium, characterised in that when there is a change in the position of the reproducing head relative to the recording medium necessitating a speed change of the recording medium said first reading clock is used to read information reproduced from a desired new location of the recording medium when the reproducing head has reached said new location, without waiting for said clock frequency to attain a value corresponding to said new location of the medium having obtained said constant linear velocity."

Reasons for the Decision

Background to the invention

1. The invention relates to an information recording device as defined in claim 1, to an information reproducing device as defined in claim 10, to a method of recording information as defined in claim 16, and to a method of reproducing information as defined in claim 18 of the patent as maintained.

All claims refer to a recording medium on which pre-recorded information is formed, the pre-recorded

information including control information - usually referred to as tracking pads or areas in the prior art - for controlling the relative motion between a recording/reproducing head and a track of the recording medium at a constant linear velocity. Constant linear velocity (CLV) media are for example CDRoms. In devices using CLV media the rotational speed of a medium has to be adjusted following a radial movement of the recording/reproducing head from one track to another in order to maintain the speed of the track relative to the head constant. Typically, the data transfer is interrupted during a track change until the speed of the medium is fully adjusted. This problem particularly arises in data-CDROMs where the read/write head does not move in a sequential manner as in audio CDs. The claimed invention according to all independent claims overcomes this problem by continuing the data transfer without waiting for adjustment to a new constant linear velocity after the recording/reproducing head has been moved to a new position, using as clock frequency the clock signal derived from the pre-recorded control information.

2. *Novelty and inventive step*

- 2.1 The only document on which the appellant has based his appeal is E7. This document refers, however, to the earlier document E1, on which the decision of the opposition was primarily based.

E1 relates to recording/reproducing methods using a constant angular velocity (CAV) as opposed to constant linear velocity. According to E1, jumping from one track to another causes a phase shift in a control

signal generated by pre-recorded tracking pads because the tracking pads are equally angularly spaced along a track but are not aligned on adjacent tracks. The controlling phase-locked loop (PLL) is in consequence temporarily unbalanced by the resulting phase shift. As a result, the data transfer is interrupted until phase and frequency of the PLL-circuit are fully re-adjusted. Therefore, in E1 a similar problem is considered as in the patent in suit. However, the interruption of the data transfer is not caused by an adjustment of the linear speed but by an adjustment of the phase of the control signal. According to E1, the problem is solved by holding the frequency of the PLL-circuit constant until the phase is re-adjusted. This is possible since the frequency of the control signal for a CAV medium is the same for all tracks and is only unbalanced as a consequence of the phase re-adjustment after a track jump. E1 also discloses (see column 8, line 43 to column 9, line 3) a second embodiment having annular zones of tracking pads within each of which the medium is operated as a CAV medium. A track jump from one zone to another requires adaptation of the linear speed, as in the patent in suit. However, E1 is silent as to the details of the read/write process during a speed change due to a track jump between zones. In particular, the document does not give any indication that the read/write process during a speed change would be resumed before the speed change is fully completed using the clock signal generated by the tracking pads. Therefore, the subject-matter of the independent claims is new with respect to the disclosure of E1. Moreover, the solution given in E1 to the problem of improving the data transfer times during track jumps within a given zone, which is achieved by holding the frequency

of the PLL-circuit constant, cannot be applied for track jumps between different zones since the frequency has to be changed during such jumps. Accordingly, E1 does not teach the skilled person how to perform the data transfer during a jump from one zone to another.

2.2 E7 relates to the recording/reproducing of data on/from a hybrid medium comprising annular zones within each of which the medium is operated as a CAV medium, as discussed above in connection with the second embodiment of E1. Between different zones, the linear velocity is changed, as in a CLV system. In E7, a solution to the problem of data interruption by a phase shift, differing from the solution of E1, is given. According to E7, the tracking pads within a given zone are angularly aligned such that there is no phase shift when the head moves from one track to another within the zone and no resulting interruption of the data transfer. Again, no information is given in the document about the read/write process during a speed change caused by a track jump between zones. In particular, there is no indication that the data transfer would be resumed before the speed change is fully completed using the clock generated by the tracking pads. Therefore, the subject-matter of the independent claims is new with respect to the disclosure of E7. As before, the solution given in E7 for improving the data transfer speed during track jumps within a given zone, namely by angularly aligning the tracking pads within the given zone, cannot be applied for track jumps between different zones since the tracking pads of different zones cannot all be aligned to each other, as becomes readily evident from Figure 3 of E7. Accordingly, E7 does not teach the

skilled person how to perform the data transfer during a jump from one zone to another.

- 2.3 The appellant basically argued that E7 dealt with the same problem as the present invention as it also discussed the problem of head jumps from one zone to another involving the adjustment of the linear speed of the tracks with respect to the head.

However, the problem actually considered in E7 is according to column 1, line 68 to column 2, line 13 only the interruption of the reading/writing process due to jumps within the **same zone** (see in particular the sentence bridging columns 1 and 2). The term "reacquired" in column 2, line 10 implies that for track jumps **within** a given zone the system returns to the same frequency as before the track jump. Jumping from one zone to another would necessitate a frequency change. No direct consideration of track jumps between zones is given in E7, although it is conceivable that the skilled person studying E7 might also become aware of the data transfer problem caused by track jumps between different zones.

- 2.4 According to the appellant, the passage at column 8, lines 4 to 7 of E7 embraced speed changes due to jumps from zone to zone since the passage states that the PLL responds to "any fluctuations in the speed of the disk from a desired level". This suggested a solution similar or identical to the one given in the patent in suit.

Although such a literal interpretation may arguably be possible, the context suggests that only minor speed

fluctuations within a track segment, in particular those due to eccentricities of the disk, are considered as becomes clear from a similar passage in E1 (column 3, lines 23 to 35 of E1).

Furthermore, the teaching of the passage at column 4, lines 27 to 32, to which the appellant has also referred, is inconsistent with his interpretation of the above passage in column 8. The passage at column 4 reiterates a requirement discussed in connection with the prior art at column 6, line 40 to column 7, line 32 of the patent in suit, namely that the disk speed has to be rapidly re-adjusted before data can reliably be transferred. This is clearly inconsistent with the appellant's interpretation of the passage in column 8 and the present invention, namely that the data transfer can be resumed before speed has been fully re-adjusted.

2.5 Since neither E1 nor E7 suggests to the skilled person that it is possible to record or read information when the recording or reproducing head has reached a new location without waiting for the clock frequency to settle down at the new constant linear velocity, a feature present in the four independent claims 1, 10, 16 and 18, it follows that the subject-matter of each of these claims involves an inventive step.

3. There being no further objections, it follows that the appeal must be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

D. Magliano

A. S. Clelland