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Aktenzeichen / Case Number / N^o du recours : T 350/88 - 3.5.1
Anmeldenummer / Filing No / N^o de la demande : 82 902 875.2
Veröffentlichungs-Nr. / Publication No / N^o de la publication : WO 83/00943 and EP 87460
Bezeichnung der Erfindung: Optical information storage
Title of invention:
Titre de l'invention :
Klassifikation / Classification / Classement : G11C 13/04

ENTSCHEIDUNG / DECISION
vom / of / du 7 November 1989

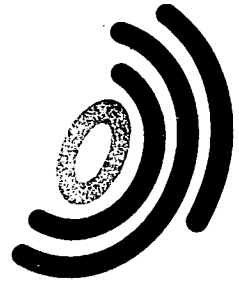
Anmelder / Applicant / Demandeur : Western Electric Company, Incorporated
Patentinhaber / Proprietor of the patent /
Titulaire du brevet :
Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56

Schlagwort / Keyword / Mot clé : "Inventive step - no"

Leitsatz / Headnote / Sommaire



Case Number : T 350/88 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 7 November 1989

Appellant : Western Electric Company, Incorporated
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Representative : Watts, Christopher Malcolm Kelway
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Decision under appeal : Decision of Examining Division 067
of the European Patent Office
dated 12 January 1988 refusing
European patent application
No. 82 902 875.2 pursuant to
Article 97(1) EPC

Composition of the Board :

Chairman : E. Persson
Members : W.J.L. Wheeler
W. Riewald

Summary of Facts and Submissions

I. Appellant's European patent application No. 82 902 875.2, filed on 31 August 1982 as international patent application No. PCT/US 82/01175 claiming priority from a previous application (US 299 172) of 3 September 1981, was refused by a decision of the Examining Division dated 12 January 1988.

II. That decision was taken on the basis of Claims 1 to 5 filed with a letter dated 20 February 1987, of which Claim 1 reads as follows:

"1. An optical storage medium having a surface on which information can be stored, said surface including void volumes (14) which delimit storage structures (16), said storage structures being alterable in response to incident energy for locally altering the optical characteristics of said surface, CHARACTERISED IN THAT the composite mean area of said storage structures is between 10 and 90 percent of the area of said surface and the characteristic distance of said storage structures is equal to or smaller than the wavelength of the electromagnetic radiation ultimately used to read said information."

Claims 2 to 5 are dependent upon Claim 1.

III. The reason given for the refusal was that the subject-matter of the claims did not involve an inventive step, having regard to the prior art disclosed in the following documents:

D1: IBM Technical Disclosure Bulletin, Vol. 22, No. 3, August 1979, page 1234, Haller et al.: "Optical Recording of Information of Microscopically Rough Substrates"

D2: US-A-4 245 229

- IV. On 15 March 1988 the Appellant filed a notice of appeal against that decision. The appeal fee was paid on 9 March 1988. The statement of grounds of appeal was filed on 24 May 1988. The 23 May 1988 was Whit Monday.
- V. The Appellant argued essentially that an inventive step was involved in identifying the two critical parameters, void volume and "characteristic distance" as defined in the present application, which were not mentioned in D1 or D2, and in specifying the ranges in which they should lie in order to get high contrast between written and unwritten areas.
- VI. In a communication pursuant to Article 110(2) EPC dated 5 June 1989, the Board gave detailed reasons as to why it appeared to the Board that D2 would lead a skilled person to make an optical storage medium falling within the scope of Claim 1 of the present application.
- VII. In a letter dated 5 October 1989 the Appellant's representative wrote: "The Applicants do not intend to take any further action with respect to this application."

Reasons for the Decision

1. The appeal is admissible.
2. However, as was explained in the Board's communication of 5 June 1989, the Board is of the opinion that the optical storage medium according to Claim 1 of the present application does not involve an inventive step, having regard to the prior art known from D2.

- 2.1 In the opinion of the Board, Claim 1 of the present application cannot be regarded as defining a selection invention. The first condition in the characterising part of the claim, namely that "the composite mean area of said storage structures is between 10 and 90 percent of the area of the surface", covers practically the entire range of possibilities, excluding only extreme cases in which there is less than 10 percent storage structures or voids. The remaining condition in the characterising part of the claim, namely that "the characteristic distance of said storage structures is equal to or smaller than the wavelength of the electromagnetic radiation ultimately used to read said information" sets a higher limit on the size of the storage structures or voids than suggested in D2 (as is explained below).
- 2.2 Thus, the point at issue here is not whether or not the importance of the conditions stated in the characterising part of Claim 1 was obvious to a person skilled in the art, but rather whether or not it was obvious to him to make an optical storage medium falling within the scope of Claim 1 of the present application.
- 2.3 D2 discloses an optical storage medium according to the prior art portion of Claim 1 of the present application. In the embodiment described from column 3, line 47 to column 6, line 66, cavities are produced by particle track etching, and have a conical form whose base diameter is 1200 \AA (column 5, lines 10 and 11). The number of cavities per cm^2 is within the range 10^{10} to 4×10^{12} so that the spacing between the cavities is sufficiently less than the shortest wavelength of light to be absorbed (column 5, lines 33 to 40). The cavities are randomly placed (column 6, lines 37 to 66) and their bases overlap at the surface of the material (column 5, lines 41 to 46), so that the total surface area occupied by their bases is less than

the sum of their individual base areas. Since the cavities are conical, tapered protuberances are left between them and the diameter of the cavities at half their depth will be of the order of $1/2 \times 1200 \text{ \AA} = 600 \text{ \AA}$. Thus, when the cavity density is given the minimum value of 10^{10} cm^{-2} , the proportion of the voids in the half depth plane would be no more than $(10^{10} \text{ cm}^{-2}) (\pi) (0.3 \times 10^{-5} \text{ cm})^2 = 28\%$ (ignoring overlapping), so that the majority of the cavities would not overlap at this depth. The "characteristic distance" (as defined in the present application at page 4, line 19 to page 5, line 5) would be no greater than about 600 \AA (i.e. the diameter of the cavities at their half depth), which is less than the wavelength of the electromagnetic radiation used to read the stored information, see D2, column 5, lines 53 to 54, where it is stated that this may range between about 0.1 and 10 \mu m ($= 1000 \text{ \AA}$ to 100000 \AA), a typical value being 4500 \AA (see D2: column 7, line 57 and column 8, line 34).

- 2.4 Thus, as set out in the Board's communication of 5 June 1989, at least when the cavity density is at or near the minimum value of the range given in D2, the composite mean area of the storage structures would lie within the range of 10 to 90 percent and the characteristic distance would be smaller than the wavelength of the electromagnetic radiation ultimately used to read the stored information, as specified in Claim 1 of the present application.
- 2.5 The Board remains of the opinion that it is obvious for a person skilled in the art who is following up the teaching of D2 to explore the whole of the range given in D2 for the number of cavities per cm^2 and thereby make an optical storage medium falling within the scope of Claim 1 of the present application.

3. In view of the above considerations, the Board considers that the subject-matter of Claim 1 does not involve an inventive step within the meaning of Article 56 EPC and that consequently a European patent cannot be granted with this claim (Article 52(1) EPC). Since the Appellant does not intend to take any further action with respect to the present application, it follows that the appeal must be dismissed.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar:

S. Fabiani

S. Fabiani

The Chairman:

E. Persson

E. Persson