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Aktenzeichen / Case Number / N° du recours : T 216/86 - 3.5.1

Anmeldenummer / Filing No / N° de la demande : 81 303 974.0

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Bezeichnung der Erfindung: Magnetic bubble memory device

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : G11C 19/08

ENTSCHEIDUNG / DECISION

vom / of / du 2 August 1988

Anmelder / Applicant / Demandeur : Fujitsu Limited

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 (yes)

Leitsatz / Headnote / Sommaire

Europäisches
Patentamt

European Patent
Office

Office européen
des brevets

Beschwerdekammern

Boards of Appeal

Chambres de recours

Case Number : T 216/86 - 3.5.1



D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 2 August 1988

Appellant : Fujitsu Limited
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Decision under appeal : Decision of Examining Division 067 of the
European Patent Office dated 30 January 1986
refusing European patent application
No. 81 303 974.0 pursuant to Article 97(1)
EPC

Composition of the Board :

Chairman : P.K.J. van den Berg

Members : W. Riewald

F. Benussi

Summary of Facts and Submissions

- I. European patent application No. 81 303 974.0, filed on 1 September 1981, claiming the priority of an application in Japan of 1 September 1980 and published under No. 0 047 167, was refused by a decision of the Examining Division 067 dated 30 January 1986.

The decision was based on Claims 1 to 6 filed with letter of 18 November 1985.

- II. The reason given for the refusal was that the subject-matter of Claim 1 lacked an inventive step in view of the following prior art documents:

- D1 NTG-Fachberichte, Volume 58, 1977, pages 210-231
METZDORF: "Einsatz von Magnetblasen für die Datenspeicherung"
pages 216-217, para. 3 "Speichermoduln", Figs. 10, 11 13
- D2 Electronic Engineering, Volume 51, July 1979, pages 39-51
HUNTER: "Magnetic Bubble Memories", Part 2, "Systems"
page 41, left hand column, para. "Coil drive", para. 42, right hand column, para "Data Save"

The Examining Division held that it was well known from the cited documents that the rotating magnetic field of a magnetic bubble memory apparatus must be stopped at a predetermined angle in order to avoid data loss, and that it was, therefore, obvious that in connection with the use of a removable magnetic bubble memory cassette provision must be made to stop the bubble motion accordingly before removal of the cassette from its holder.

III. On 25 March 1986, the Appellant lodged an appeal against this decision by telex which was confirmed by a letter received on 26 March 1986. The appeal fee was received on 25 March 1986. Together with a Statement of Grounds, received on 5 June 1986, the Appellant filed three different versions of Claim 1 as main and auxiliary requests. Three amended versions of Claim 1 were received on 18 August 1986 together with a further auxiliary request for Claim 1 only made in the accompanying letter to the effect that Claim 1 be limited to the embodiment of Figure 3 of the patent.

In a communication dated 28 March 1988, the Rapporteur made additional reference to two further documents cited in the search report:

D3 Electronic Engineering, Vol. 52, No. 634, February 1980, pages 95-101, London, GB
T. Morikawa: "A magnetic bubble cassette memory"
Picture A; Figure 2, page 101

D4 Journal of Electronic Engin., Vol. 17, No. 159, March 1980, pages 32-35, Tokyo, JP
Wataru Endo: "Magnetic bubble memories achieve recognition"

and informed the Appellant of the provisional opinion that and why only a Claim 1 according to the Appellant's last auxiliary request might meet the requirement of inventive step.

In reply to this communication the Appellant filed on 5 July 1988 a set of new claims together with accordingly amended parts of the description and a new set of drawings.

IV. The Appellant requests that the decision be set aside and a patent be granted with the application documents as amended.

The independent claim 1 reads as follows:

"1. Magnetic bubble memory apparatus comprising: a holder (16) for receiving a magnetic bubble memory cassette (1) including a bubble drive means (5) for generating a rotating magnetic field; a bubble actuating circuit (26-32) for actuating the bubble drive means, the circuit including bubble stop means (25, 26) for stopping the rotating magnetic field at a predetermined angle; connection means (14, 18) for electrically connecting the bubble drive means of the cassette and the bubble actuating circuit of the said apparatus when the cassette is in the holder; and characterised by a cassette ejection member (20) for disconnecting the connection means and ejecting the cassette from the holder; movable means (21) for actuating the ejector member and which prior to actuating the ejector member effects an idle motion; and detector means (22) which detects the said idle motion of the movable means (21) and which is coupled to the bubble stop means to stop the bubble motion at the predetermined angle in advance of the disconnection of the connection means (14, 18) and the removal of the cassette (1)."

A request for oral proceedings filed on 5 June 1986 was withdrawn with letter received on 5 July 1988 on condition that the Board of Appeal is prepared to proceed with the application on the basis of the newly filed documents.

Reasons for the Decision

1. The Appeal complies with Articles 106-108 and Rule 64 EPC and is, therefore, admissible.
2. There are no formal objections on the basis of Article 123(2) EPC to the version of the claims and to the amended description.

The features of Claim 1 correspond to the features clearly disclosed in the documents as filed in connection with the embodiment of Figure 3. Claims 2 to 5 correspond to the Claims 3 to 5 and 7 originally filed. The introductory part of the description has been adapted accordingly. The embodiment of the original Figures 5 and 6 has been cancelled.

3. Novelty

All four cited documents deal with magnetic bubble memories.

D1 refers on page 217 in the penultimate paragraph to the possibility to devise the storage modules of a magnetic bubble memory apparatus as removable storage modules similar to known tape cassettes. D3 and D4 disclose further details of memory cassettes which were already manufactured.

So, there is no doubt that magnetic bubble memory apparatuses according to the precharacterising part of Claim 1 are known.

But no document deals with any specific means necessary in connection with removing the memory from the holder.

Thus, the subject-matter of Claim 1 differs from this prior art by the characterising features which aim at

reliably stopping the bubble motion prior to a disconnection of the cassette from the holder.

Consequently, the subject-matter of Claim 1 is novel.

4. Inventive step

The problem underlying the subject-matter of Claim 1 relates to the envisaged possibility that the cassette may be pulled out of the apparatus by mistake during the operation of the device. It is obvious that such faulty action may happen and it is to be regarded as incumbent on a skilled person to look for solutions to this problem.

Therefore, the problem as such does not provide an inventive step.

It is known from the prior art that power up or down in a bubble memory apparatus may cause spurious current pulses in the drive coils for the rotating magnetic field so that the data may be corrupted (cf. D2, page 43, right hand column, first paragraph). It is, therefore, clear for the skilled person that arbitrary interruption of the coil drive by removing the cassette entails the risk to corrupt the data and cannot be tolerated. Start and stop of the coil drive must only be effected by faithful signals applied to the bubble actuating circuit, which ensure that bubble motion is stopped at one of the predetermined angles which defines unequivocal bubble positions.

Therefore, removing the cassette requires that the bubble stop means are actuated in advance of the disconnection of the coil driver and removal of the cassette. The Board agrees with the finding of the Examining Division that it is only a straightforward consequence of the prior art to

provide means for stopping the bubble motion which must be actuated before removal of the cassette can take place.

However, the Board is satisfied that, in the absence of any indication in the prior art, cited in the proceedings, as how to devise such actuating means, the further considerations leading to the claimed solution cannot be regarded as being obvious.

There is not the slightest hint in the cited prior art to apply movable means which are separated from an actual cassette ejection member by an idle motion space. This allows the detection of an oncoming ejection of the cassette by detector means responsive to the initial movement of the movable means prior to any movement of the cassette itself. There is no need for different means separately to be actuated for bubble stop on the one hand and cassette ejection on the other hand.

Therefore, the subject-matter of Claim 1 is considered to involve an inventive step within the meaning of Article 56 EPC.

5. The Board has also considered the further documents cited in the search report and found them not prejudicial to the present Claim 1 neither alone nor in combination with the documents cited above.
6. Claim 1 is hence allowable.

Since dependent Claims 2 to 5 concern particular embodiments of the magnetic bubble memory apparatus according to Claim 1, they are also allowable.

7. The description has been brought into accordance with Claim 1, indicates on the new page 2 the most relevant prior art and meets the additional requirements of Rule 27

EPC. Some slight clerical errors could be corrected without previous consent of the Appellant.

8. It was not necessary to hold oral proceedings since the Appellant's request was fully complied with.

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 grant a European patent on the basis of the following documents:

2.1 Description:

pages 1, 4, 5 and 10, as originally filed;
pages 2, 2A, 3 and 6 to 9 filed on 5 July 1988;
with the following corrections:
page 2, line 14: "Magnetic...."
page 2, line 26: "..Datenspeicherung.."
page 2A, line 7: "...to the ..."
page 2A, line 10: "magnetic bubble memory device"
page 2A, line 16: add "motion;" at the end of the line.
page 4, line 13: replace "4" by "14".

2.2 Claims 1 to 5 filed on 5 July 1988.

2.3 Drawings: sheets 1/5 to 5/5 filed on 5 July 1988.

The Registrar:

The Chairman:

S. Fabiani

P.K.J. van den Berg