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Aktenzeichen / Case Number / N° du recours : T 15/85 - 3.5.1

Anmeldenummer / Filing No / N° de la demande : 81 303 185.3

Veröffentlichungs-Nr. / Publication No / N° de la publication : 0 046 012

Bezeichnung der Erfindung: A bubble memory system and a numerical control
Title of invention: apparatus comprising such system
Titre de l'invention :

Klassifikation / Classification / Classement : G11C 19/08

ENTSCHEIDUNG / DECISION

vom / of / du 31 May 1988

Anmelder / Applicant / Demandeur : Fanuc Ltd

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56

Kennwort / Keyword / Mot clé : Inventive step

Leitsatz / Headnote / Sommaire

Europäisches
Patentamt
Beschwerdekammern

European Patent
Office
Boards of Appeal

Office européen
des brevets
Chambres de recours



Case Number : T 15/85 - 3.5.1

D E C I S I O N
of the Technical Board of Appeal 3.5.1
of 31 May 1988

Appellant : FANUC LTD
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Decision under appeal : Decision of Examining Division 067
of the European Patent Office
dated 9 August 1984 refusing European
patent application No. 81 303 185.3
pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : P.K.J. Van den Berg
Members : J.A.H. Van Voorthuizen
F. Benussi

Summary of Facts and Submissions

- I. European patent application No. 81 303 185.3 filed on 13.07.81 (publication No. 0 046 012) claiming a priority of 15.07.80 (JP) was refused by a decision of the Examining Division 067 dated 09.08.84. That decision was based on Claims 1 and 2 filed on 31.10.83 and independent Claim 3 filed on 20.03.84.
- II. The reason given for the refusal was that the subject-matter of the claims lacked inventive step having regard to US-A-3 786 445, FR-A-2 172 675 and FR-A-2 356 985.
- III. The Appellant lodged an appeal against this decision on 06.10.84. The appeal fee was paid on 08.10.84. The Statement of Grounds was submitted on 11.12.84.
- IV. In a communication of 28.08.87 the Rapporteur informed the Appellant that, subject to the introduction into the description of references to the prior art documents, the grant of a European patent could be envisaged.. On 15.10.87 the Appellant submitted an amended description.
- V. In his Statement of Grounds the Appellant essentially argued that the cited documents could not suggest to a person skilled in the art the combination of technical features set out in the claims. In particular, US-A-3 786 445 did not disclose the special advantages associated with having the magnetic bubble memory element module and the sense amplifier together on the cassette. Moreover, it was not obvious to provide one sense amplifier switchable between different chips. Also, the portable nature of the adapter, enabling it to be carried and connected to one host system after another was not suggested by the prior art (cf. the two French patent

applications). The Examining Division seems to have reasoned that because of the apparent advantages of the invention it must have been obvious to use it and to have made an ex-post facto analysis showing theoretically how the invention might be arrived at by a series of apparently easy steps.

VI. The Appellant requested the grant of a European patent on the basis of Claims 1 and 2 filed on 15.10.87, which read as follows:

1. A bubble memory system for use in exchanging information with a host system, the bubble memory system being portable whereby it can be carried from, and connected to, one host system after another, thereby to permit the host systems sequentially to cooperate with the bubble memory system, the bubble memory system comprising a cassette adapter and a bubble memory cassette which accommodates a storage medium comprising a plurality of bubble memory element modules, the cassette being capable of being inserted into and withdrawn from the cassette adapter which is interposed between the bubble memory element modules and a host system when the bubble memory system is in use, the cassette adapter including a control circuit for use in exchanging information between the bubble memory cassette and such host system, and the cassette having built into it a sense amplifier for the bubble memory element modules, and a selector to enable information exchange to take place via the sense amplifier with a bubble memory element module which is selected by said selector.

2. Numerical control apparatus comprising a plurality of numerical control devices each of which includes a built-in memory for storing a part program, a programming apparatus for writing a part program for the numerical control

devices, and a bubble memory system for use in exchanging information with any one of the numerical control devices and the programming apparatus as a host system, the bubble memory system being portable whereby it can be carried and connected to the programming apparatus for writing a part program into the bubble memory system, and then carried and connected to the numerical control devices in turn so that the part program written into the bubble memory system can be written into the built-in memories of the numerical control devices, the bubble memory system comprising a cassette adapter and a bubble memory cassette which accommodates a storage medium comprising a plurality of bubble memory element modules, the cassette being capable of being inserted into and withdrawn from the cassette adapter which is interposed between the bubble memory element modules and a host system when the bubble memory system is in use, the cassette adapter including a control circuit for use in exchanging information between the bubble memory cassette and such host system, and the cassette having built into it a sense amplifier for the bubble memory element modules, and a selector to enable information exchange to take place via the sense amplifier with a bubble memory element module which is selected by said selector.

Reasons for the Decision

1. The appeal complies with Articles 106-108 and Rule 64 EPC and is, therefore, admissible.
2. An analysis of the documents reflecting the prior art which were cited in the course of the proceedings leads to the following summary:

- 2.1 In FR-A-2 172 675 it is proposed to replace the then usual punched tape in NC systems by a semiconductor memory module (3) (equivalent to a cassette) which can be introduced in a separate but non-portable controller (6) which is permanently connected via a cable to the machine tool (7) to be controlled. The controller (6) has an adapter part (8) which comprises the circuitry for cooperating with the module (3).
- 2.2 FR-A-2 356 985 discloses the use of a semiconductor memory module (cassette) CMU, which can be introduced into an adapter and controller unit fixedly attached to a machine tool. The read/write circuitry forms part of this unit.
- 2.3 In US-A-786 445 an integrated magnetic bubble and semiconductor device is disclosed. In order to avoid the need for an electrical interface to peripheral control and sensing circuitry the bubble device and the electronic circuitry (in particular the sensing and amplifier means) are mounted in close proximity on a common semiconducting substrate. This close proximity, it is stated, decreases noise picked up by the sense amplifier.
- 2.4 US-A-4 180 863 describes a device in which a number of modular magnetic domain devices are permanently mounted on a common substrate, which also carries a number of sense amplifiers and associated drive and other support circuitry. The modules are not individually selectable.
- 2.5 EP-A-13 192 describes a credit card system in which the card is to be inserted in a fixed data processing station. The card bears a magnetic bubble memory in which an identification code is stored and which cooperates with the station. The possibility is mentioned to introduce several cards simultaneously. The signal read out from the memory

under control by the station is inputted to a comparator circuit mounted on the card. If any amplification of the signal would be required, the amplifying means would have to be on the card also.

- 2.6 Finally, in NTG Fachberichte, 1977, pages 210-231, in particular page 217, penultimate paragraph, the possibility is considered of bubble memories in cassette form.
3. Having regard to this state of the art, it seems to the Board that the subject-matter of Claim 1 can be considered as comprising several measures:
 - (a) the use of an exchangeable bubble memory in cassette form
 - (b) the use of a portable cassette adapter which is interposed between the cassette and a host system
 - (c) the use of a cassette comprising a plurality of bubble element modules, which are selectable at will by means of a selector built into the cassette
 - (d) the use of a common sense amplifier for all the modules, which is built into the cassette.
4. Strictly speaking, the use of an adaptor (to reduce costs) the use of a cassette comprising several bubble element modules (to increase the storage capability of the cassette) and the mounting of the sense amplifier in the cassette (to avoid noise problems) could be seen as solving three different technical problems. Nevertheless, the technical relationship between them can reasonably be regarded to be so narrow that the measures distinguished above can be considered together for the purpose of assessing inventive step.

5. Even if at least the measures (a), (b), and (d) might in themselves be considered as obvious in respect to the cited prior art, the Board's present opinion is that none of the documents or any association of them would suggest to the person skilled in the art the particular combination of measures forming the subject-matter of Claim 1. Consequently, this claim must be held allowable and the same applies to Claim 2.
6. The amendments to the description submitted on 11.12.84 and 15.10.87 take account of the prior art and of the scope of the claims in their present form. They are not open to objections.
7. In the introductory part of the description it is stated that "NC devices for controlling machine tools have recently been adapted to employ bubble memories" and that "the system that utilises the bubble memory medium is ... provided with (1) a bubble memory cassette which houses solely the bubble memory element and (2) a cassette adapter which contains the peripheral circuitry and a holder for holding the inserted bubble memory cassette and for establishing electrical contact with the cassette."

No document was cited which describes such a system. The Board understands the said statements as referring to the content of EP-A-81 302 794.3 (publication number 0 042 749) filed on 22 June 1981 by the same applicant and published on 30 December 1981, after the priority date and also after the filing date of the present application.

It is therefore required that this European application be cited in the description of the present application at page 2, at the end of line 3.

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:
 - (a) Claims 1 and 2 as filed on 15.10.87.
 - (b) Description as amended on 11.12.84 and 15.10.87, with the proviso that a reference to EP-A-81 302 794.3 be inserted.
 - (c) Drawings as originally filed.

The Registrar:

The Chairman:

S. Fabiani

P.K.J. van den Berg