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Aktenzeichen / Case Number / N<sup>o</sup> du recours : T 120/85

Anmeldenummer / Filing No / N<sup>o</sup> de la demande : 82 102 512.9

Veröffentlichungs-Nr. / Publication No / N<sup>o</sup> de la publication : 0 068 079

Bezeichnung der Erfindung: Magnetic head assembly and method of assembly

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : G11B 5/42, G11B 5/10

### ENTSCHEIDUNG / DECISION

vom / of / du 21 October 1987

Anmelder / Applicant / Demandeur : International Business Machines Corporation

Patentinhaber / Proprietor of the patent /  
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPO / EPC / CBE Article 56

Kennwort / Keyword / Mot clé : Inventive step (yes)

Leitsatz / Headnote / Sommaire

Europäisches  
Patentamt

Beschwerdekammern

European Patent  
Office

Boards of Appeal

Office européen  
des brevets

Chambres de recours



Case Number : T 120/85

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.1  
of 21 October 1987

**Appellant :** International Business Machines Corporation  
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New York 10504  
U.S.A.

**Representative :** B. Ahlman  
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**Decision under appeal :** Decision of Examining Division 067  
of the European Patent Office  
dated 22 January 1985 refusing  
European patent application  
No. 82 102 512.9 pursuant to  
Article 97(1) EPC

**Composition of the Board :**

**Chairman :** P.K.J. van den Berg

**Members :** W.J.L. Wheeler  
P. Ford

## Summary of Facts and Submissions

- I. European patent application No. 82 102 512.9, filed on 25 March 1982 (publication number 0 068 079) and claiming priority from a prior application of 30 June 1981 (US 278 956), was refused by the decision of the Examining Division 067 of the European Patent Office dated 22 January 1985.
- II. The decision under appeal was taken on the basis of Claims 1 to 8 received on 18 February 1984.
- 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 known from SU-A-672 648 and common general knowledge in the art.
- IV. The Appellant lodged an appeal against this decision on 22 February 1985. The appeal fee was paid on the same day. The statement of grounds was filed on 18 March 1985.
- V. After some correspondence between the Board and the Appellant, the Appellant filed, on 12 October 1987, a request for the grant of a patent on the basis of the following documents:  
  
Claim 1, received 12.10.87  
Claims 2 to 6, received 18.03.85  
Claim 7, received 19.08.87  
  
description, pages 1, 1A and 2, received 12.10.87, and pages 3 to 5 as originally filed  
  
drawings, sheets 1/2 and 2/2 as originally filed.

VI. Claim 1 reads as follows:

1. A magnetic head assembly comprising head module means (10, 12) mounted within a housing (14) of non-magnetic material, the head module means and housing being of materials having different coefficients of thermal expansion, the housing being of integral, one-piece construction having two opposing walls (16, 18), and a non-magnetic, thermally compensating leaf spring (24) disposed between one wall (16) of the housing and the head module means to fasten the latter to the housing for precise alignment of the head module means relative to the housing, characterised in that the head module means is of magnetic material, the leaf spring provides thermal compensation in the sense that it maintains an essentially constant clamping force exerted by the spring, and in that adjusting screw means (26) are provided for adjusting said clamping force.

Claims 2 to 6 relate to specific embodiments of the magnetic head assembly according to Claim 1.

Claim 7 reads as follows:

7. A method of assembling a magnetic head assembly according to any preceding claim comprising the steps of:

securing the housing to an assembly tool (40) with a datum surface aligned relative to the top of an electromagnet (32, 34, 36),

inserting the head module means (10, 12) into the housing (14),

energising the electromagnet to magnetically urge the head module means against the inner surface of said opposing wall (18) of the housing,

inserting the leaf spring (24) into the space between the head module means, held against said opposing wall, and said one wall (16) of the housing and

adjusting the clamping force of the leaf spring by means of said adjusting screw means (26) to a predetermined value to maintain the precise alignment of the head module means relative to the housing.

#### **Reasons for the Decision**

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.
2. The current version of the claims and description does not extend the subject-matter of the application beyond the content of the application as filed. Therefore, no objection arises under Article 123(2) EPC.
3. A magnetic head assembly in accordance with the prior art portion of Claim 1 is known from SU-A-672 648, the basis for the Board's interpretation of this document being a translation into the English language, filed by the Appellant on 18 February 1984.
4. The assembly according to Claim 1 differs from this prior art in that:
  - (a) the head module means is of magnetic material,

- (b) the leaf spring provides thermal compensation in the sense that it maintains an essentially constant clamping force exerted by the spring, and
- (c) adjusting screw means are provided for adjusting said clamping force.

As may be seen from the description on page 3 of the present application, the purpose of the adjusting screw means, feature (c), is to enable the clamping force to be adjusted so as to obtain thermal compensation in the sense specified, feature (b), in order to minimise the thermal mismatch problems which arise when the head module means is of magnetic material, feature (a), thereby providing a simple and inexpensive means of maintaining a precise alignment of the head module means relative to the housing.

Although several of the prior art documents mentioned in the search report, namely US-A-3 484 565, DE-B2-1 801 915 and US-A-3 005 879, disclose the use of a leaf spring to clamp the head module means in a desired position relative to the housing (prior to permanent fixing by bonding or filling) there is nothing in any of these documents or in SU-A-672 648 to suggest that adjusting screw means could, let alone should, be provided to adjust the clamping force exerted by the leaf spring. Furthermore, it does not appear likely that such a measure would suggest itself.

Even if, despite the absence of a lead, a person skilled in the art did think of providing adjusting screw means, there is no reason to suppose that he would have thought it worth while to try to obtain a substantially constant clamping force by adjusting the screw means.

The Board therefore concludes that, having regard to the state of the art as cited in the search report, it would not have been obvious to a person skilled in the art to construct a magnetic head assembly according to Claim 1, and that the claimed subject-matter is therefore to be considered as involving an inventive step within the meaning of Article 56 EPC.

Claim 1 and Claims 2 to 6, relating to particular embodiments, are therefore allowable.

4. Claim 7 (method claim) is limited to assembling a magnetic head assembly according to any of the preceding claims. The last step includes adjusting the clamping force of the leaf spring by means of the adjusting screw means to a predetermined value to maintain the precise alignment of the head module means relative to the housing. It follows that the claimed method involves an inventive step for the reasons given above in connection with Claim 1.

Claim 7 is therefore allowable.

5. As the only ground for refusal, lack of inventive step, is no longer valid, the decision under appeal must be set aside. The Board, however, notes that it agrees with the decision of the Examining Division, since the claims before them did not include the feature of maintaining an essentially constant clamping force exerted by the spring.

## 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 patent on the basis of the documents specified in section V above.

The Registrar

The Chairman

F.J.M. Klein

P.K.J. van den Berg

PF.  
WJLW