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Bezeichnung der Erfindung:
Title of invention:
Titre de l'invention : Magnetic Transducer Head Support Assemblies

Klassifikation / Classification / Classement : G 11 B 5/60

ENTSCHEIDUNG / DECISION

vom / of / du 28. January 1986

Anmelder / Applicant / Demandeur : International Business Machines Corporation

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Article 56

"Inventive step"

Leitsatz / Headnote / Sommaire

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Beschwerdekammern
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Case Number: T 75 / 82

DECISION

of the Technical Board of Appeal 3.5.1

of 28. January 1986

Appellant: INTERNATIONAL BUSINESS MACHINES CORPORATION
Armonk, New York 10504

Representative: Lancaster, James Donald
IBM United Kingdom Patent Operations
Hursley Park
GB-Winchester, Hants, SO21 2JN

Decision under appeal: Decision of Examining Division 067 of the European Patent Office dated 07.01.82 refusing European patent application No 79 101 715.5 pursuant to Article 97(1) EPC

Composition of the Board:

Chairman: G. Korsakoff
Member: J. van Voorthuizen
Member: P. Ford

Summary of Facts and Submissions

I European patent application 79 101 715.5 filed on 01.06.79 (publication number 0 007 401) claiming a priority of 27.07.78 (US) was refused by a decision of the Examining Division 067 of the EPO of 07.01.82. That decision was based on Claim 1 filed on 26.02.81 and Claims 2-10 as originally filed.

II The reason given for the refusal was that the subject-matter of the claims lacked inventive step with regard to US-A-3 931 641 (corresponding to GB-A-1 464 059).

III The applicant lodged an appeal against this decision on 04.03.82. The appeal fee was paid on 05.03.82. The Statement of Grounds was filed on 27.04.82.

IV In communications of 15.12.82, 15.06.84, 14.05.85 and 17.09.85 the Rapporteur of the Board of Appeal formulated objections against the application in its then effective form and drew the appellant's attention to two further documents (US-A-3 202 772 and US-A-3 665 434) which seemed to disclose certain features of the invention.

V In the Statement of Grounds, in the replies to the above-mentioned communications and in the course of the oral proceedings held on 19.04.85 the appellant essentially argued as follows:

The object of the invention is to provide a support assembly for a magnetic head which has an improved ability to follow the surface of a record medium at a constant spacing. Constancy of head to medium spacing varies directly in proportion to the effective mass at the slider.

.../...

Reduced inertia (effective mass) of the support assembly is achieved by a non-obvious combination of characteristics, namely: omitting the load beam which is present in all the embodiments according to US-A-3 931 641; giving a special shape to the arm allowing the use of a separate flexure having three parallel fingers and employing a cranked crossleg in that flexure.

In Figs. 7 and 8 of US-A-3 931 641 a separate bent rigid slider plate is shown which acts as the central finger but is made of a thicker material than the other fingers of the flexure. The offset of the central finger in the flexure obtained by cranking the crossleg according to the invention is not an obvious alternative to the use of a bent slider plate. It is nowhere suggested in the prior art that a flexure comprising three parallel fingers could be made of a different material from that of the arm.

VI The appellant requested that a European patent be granted on the basis of the Claims 1-8 filed on 13.11.85. These claims read as follows:

1. A support assembly for a magnetic transducer head comprising an arm (10) having a longitudinal axis (32), one end (16) of the arm being resilient, and the remainder (18) of the arm being stiff and being triangular with lateral flanges (20), the resilient end of the arm being connected to a rigid support (14) and the other end of the arm carrying a flexure (26) for connection to the transducer head (38), the flexure being formed from a single piece of material and having two outer spaced apart resilient fingers (30) parallel to the longitudinal axis extending away from the rigid support, a crossleg (34) spanning the spacing between the remote ends of the two outer fingers, the crossleg being wider, and thereby less flexible, than the two outer fingers, and an inner central finger (36) extending parallel to the

.../...

two outer fingers from the crossleg towards the rigid support, the central finger and the tip of said other end of the arm engaging one another through a protruding contact (42), the central finger being offset from the lane in which the two outer fingers lie, and the offset being substantially equal to the height of the protruding contact, characterised in that the flexure is a separate piece attached to the remainder of the arm, the crossleg is cranked where it joins each of the outer fingers so that the crossleg is provided with an offset portion (40), the central finger extends from the offset portion of the crossleg and lies in a plane parallel to the plane in which the two outer fingers lie, and the lateral flanges of the remainder of the arm extend all the way to the protruding contact (42), the flexure having regions which project latterally of the arm, the two outer fingers extending from said regions clear of the arm towards the crossleg (34).

2. An assembly as claimed in Claim 1, in which the protruding contact is a protuberance on the tip of the arm.

3. An assembly as claimed in Claim 1, in which the protruding contact consists of a dimple formed in the central finger.

4. An assembly as claimed in Claim 3, and a transducer-head-carrying air bearing slider mounted on the central finger.

5. An assembly as claimed in Claim 4, in which the protuberance is located on the longitudinal axis and on the axis normal thereto so that the flexure allows pitch and roll of the slider about these axes in response to changes in the air bearing supporting the slider.

.../...

6. An assembly as claimed in Claim 5, in which the protuberance is located to apply a force through the centre of gravity of the slider.

7. An assembly as claimed in any preceding claim, in which the arm is substantially symmetrical about the longitudinal axis.

8. An assembly as claimed in any preceding claim, in which the flexure is substantially rectangular.

Reasons for the Decision

1. The appeal complies with Articles 106-108 and Rule 64 EPC and is, therefore, admissible.

2. As the Examining Division, in view of the then effective wording of the claims and the arguments presented to it by the applicant was not satisfied that the claimed subject-matter involved inventive step, it properly rejected the application.

3. The present claims are limited by the introduction of further characteristics necessary to obtain the desired effect of the invention. Certain of these characteristics were only disclosed in the drawings of the application as filed. The Board considers, however, that the said characteristics would clearly be recognized by a person skilled in the art as forming part of the invention now defined in the claims and that, accordingly, the amendments to the claims do not contravene Article 123(2) EPC.

4. The Board also considers that the combination of characteristics now claimed in Claim 1 could not be derived by a person skilled in the art in an obvious way from the prior art as reflected by the documents cited in the

proceedings before the Examining Division and before the Board of Appeal. In particular, the appellant has made it clear that the configuration of the arm as well as of the flexure contribute significantly to the reduction of the inertia and that the two configurations are closely related.

5. For the foregoing reasons, Claim 1 in its present form, and the dependent Claims 2-8, which describe further embodiments of the invention, are held to be allowable.

6. The amendments to the description submitted on 13.11.85 duly take account of the prior art and of the scope of the claims in their present form and, as they do not contain subject-matter which extends beyond the content of the application as filed, they are not open to objection under Article 123(2) EPC. Accordingly, they must be allowed.

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 1-8 filed on 13.11.85
   (b) Description filed on 13.11.85
   (c) Drawings as originally filed.

The Registrar The Chairman

B A Norman G Korsakoff