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D E C I S I O N
of 13 January 2004

Case Number: T 0513/03 - 3.5.2

Application Number: 97902684.6

Publication Number: 0827258

IPC: H02K 5/16

Language of the proceedings: EN

Title of invention:

Device for supporting rotating shaft and small-sized motor

Applicant:

SEIKO EPSON CORPORATION

Opponent:

-

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 123(2)

Keyword:

"Admissibility of the amendments (yes)"

"Novelty and inventive step (yes)"

Decisions cited:

T 0169/83

Catchword:

-



Case Number: T 0513/03 - 3.5.2

D E C I S I O N
of the Technical Board of Appeal 3.5.2
of 13 January 2004

Appellant:

SEIKO EPSON CORPORATION
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Shinjuku-ku,
Tokyo 163-0811 (JP)

Representative:

Rupprecht, Kay, Dipl.-Ing.
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Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 21 January 2003
refusing European application No. 97902684.6
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: W. J. L. Wheeler
Members: J.-M. Cannard
P. Mühlens

Summary of Facts and Submissions

I. The appellant contests the decision of the examining division to refuse European patent application No. 97 902 684.6. The reason given for the refusal was that independent claims 1 and 10 filed with the letter dated 17 June 2002 did not meet the requirements of Articles 52(1) and 54 EPC.

II. The following documents:

D1: EP-A-0 168 743, and

D4: JP-A-63 107 437 with the "JAPIO" abstract,

considered in the first instance proceedings, remain relevant to the present appeal.

III. Oral proceedings were held on 13 January 2004, in the course of which the appellant filed a new main request. Independent claims 1 and 9 according to the main request read as follows:

Claim 1:

"A rotating shaft support member (1) for supporting a rotating shaft (133) comprising a solid disk-shaped bracket main body (2) having a bottom surface and a bearing unit (4) at a central portion of said bracket main body (2) having a bottomed shaft bore (41) with an inner peripheral surface (42) adapted to be in contact with the outer peripheral surface of said rotating shaft (133) and a bottom surface (43) adapted to abut an end surface of the rotating shaft (133),

characterized in that

said bottomed shaft bore (41) of said bearing unit (4) is integrally formed in said bracket main body (2) so that the bottom surface (43) of said shaft bore (41) lies above the entire bottom surface of the bracket main body (2) within the disk-shaped bracket main body (2)."

Claim 9:

"A small motor (10) comprising:

a casing (11) with an end section equipped with the rotating shaft support member (1) according to any one of claims 1 to 8;

a rotor (13) rotatably supported by said rotating shaft support member (1); and

a stator (14) provided on the outer peripheral section of said rotor (13)."

Claims 2 to 8 are dependent on claim 1.

IV. The arguments of the appellant can be summarized as follows:

The examining division misunderstood the meaning of the expression "integrally formed in" when construing claims 1 and 10 in the decision under appeal. This expression did not mean that the bearing unit of the

invention was integrally cast with the bracket main body, but that the bearing unit and the bottomed shaft bore thereof were entirely formed within the bracket main body, no part of the bearing unit protruding from this body, as this appeared from the features introduced in the characterizing part of claim 1 according to the present main request. These features, which were clearly, unmistakably and fully derivable from the drawings of the application as filed, did not contravene Article 123(2) EPC and were neither disclosed by any of the cited prior art documents, nor suggested by their teachings.

- V. The appellant requested that the decision under appeal be set aside and that a patent be granted in the following version:

claims: 1 to 9, filed in the oral proceedings,

description: pages 1,2,2a, 3 to 14, filed in the oral proceedings,

drawings: sheets 1 to 4, filed in the oral proceedings.

Reasons for the Decision

1. The appeal is admissible.
2. *Amendments*

The Board is satisfied that the set of claims according to the present main request and the amendments to the

description and figure 1 satisfy the requirements of Article 84 EPC and do not contravene Article 123(2) EPC.

This applies in particular to the subject-matter of claim 1 which differs *inter alia* from the rotating shaft support member defined by the combination of the features recited in claims 1 and 2 as originally filed in that:

- (a) the bracket main body is now restricted to being a solid disk-shaped bracket main body having a bottom surface, and the bearing unit is now restricted to being at a central portion of said bracket main body; and
 - (b) the feature of the bearing that it was "formed integrally **with** said bracket main body" has been replaced by the phrase "said bottomed shaft bore (41) of said bearing unit (4) is integrally formed **in** said bracket main body (2) so that the bottom surface (43) of said shaft bore (41) lies above the entire bottom surface of the bracket main body (2) within the disk-shaped bracket main body (2)", as set out in the characterizing part of claim 1 (emphasis added by the Board).
3. The embodiments of realisation according to figures 1 to 4 of the original application clearly and unambiguously show a bracket main body (2) which is in the form of a solid disk with a bottom surface and a bottomed shaft bore (41) which is integrally formed within the bracket main body (2) at a central portion thereof. This bottomed shaft bore, whose inner peripheral surface (42) is in contact with the outer

peripheral surface of the rotating shaft (133) and whose bottom surface (43) lies above the entire bottom surface of the disk-shaped bracket main body and abuts an end surface of the rotating shaft, has the structure and the function of a bearing unit. This disclosure, which supports the features incorporated in claim 1 (see paragraph 2 (a) and (b)), does not contradict other parts of the disclosure, and more specifically neither the preferred embodiment of the rotating shaft support member disclosed in the description as originally as filed (see published application: column 3, line 11 to column 5, line 58; figures 1, 2 and 4) nor the description therein of the bearing unit being "formed integrally with the bracket main body (2)" (column 3, lines 16 to 29). Figures 1 to 4 are an integral part of the disclosure of the preferred embodiment of the invention, which is stated to be "described in detail in conjunction with the preferred embodiments shown in the accompanying drawings" (column 3, lines 11 to 14). In accordance with the established case law of the Boards of Appeal (see T 169/83, OJ 1985, 193, points 3.5 and 3.6), the inclusion in claim 1 of the features "a solid disk-shaped bracket main body having a bottom surface" and "a bearing which is at the central portion of said bracket main body" and the features recited in its characterizing part, which are clearly, unmistakably and fully derivable as to their structure and function from the drawings as originally filed, is a restriction of the subject-matter of this claim admissible under Article 123(2) EPC.

4. According to the appellant, the phrase "a bearing unit... formed integrally with the bracket main body" in the application as filed should not be interpreted as meaning that the bearing is integrally cast with the associated bracket main body, as stated by the examining division in the contested decision. Rather, the bearing unit should be understood as forming an integral part of the bracket main body in the sense that all parts of the bearing unit lie within the bracket main body, and do not protrude from it, as this appears from the expression "integrally formed in" in the characterizing part of claim 1. The Board shares this view.

4.1 It is true that, in a preferred mode of manufacturing, the bracket main body (2) and the bearing (4) may be integrally cast by injection moulding of a resin (published application: column 4, line 32 to column 5, line 52; figure 4; claim 3), but this does not mean that the feature "a bearing unit... formed integrally with the bracket main body 2" in column 3, lines 28 to 31 of the description, which identifies a compulsory feature of the rotating shaft support member of the invention, is to be understood as meaning that the bearing unit is integrally cast with the bracket main body. Rather, it has to be construed as meaning that the bearing unit is integrally formed within the bracket main body, in accordance with the disclosure of the drawings (see paragraph 3). The same consideration applies to the corresponding phrase "a bearing unit... formed integrally with said bracket main body" in original claim 1.

4.2 It follows from the foregoing that the replacement of this phrase by the features now recited in the characterizing part of claim 1 does not contravene Article 123(2) EPC.

5. The amendments made to claim 6 and to the description and figure 1 of the drawings are for removal of inconsistencies and the acknowledgement of the prior art. These amendments are also unobjectionable under Article 123(2) EPC.

6. *Novelty and inventive step*

The subject-matter of claim 1 is considered to be new (Article 54(1) EPC) because none of the cited prior art documents discloses a rotating shaft support member comprising the features set out in the characterizing part of claim 1. More specifically:

6.1 Document D1 discloses a rotating shaft support member (28) which comprises a bracket main body (1) having a bottom surface and a bearing unit (4) at a central portion of said bracket main body having a bottomed shaft bore with an inner peripheral surface in contact with the outer peripheral surface of a rotating shaft (44) and a bottom surface (5) adapted to abut an end surface of the rotating shaft. The bearing (4) is integrally cast with the bracket main body. However, the bracket main body has a recess at its central portion, in the middle of which the bearing with the bottomed shaft bore is located, protruding beyond the bottom surface of the bracket main body. The bottomed shaft bore in D1 is neither integrally formed **in** the bracket main body nor is the bottom surface of the

- shaft bore lying within the bracket main body above the entire bottom surface thereof.
- 6.2 Document D4 discloses a rotating shaft support member which comprises a bracket main body and a bearing unit (7) at a central portion of said bracket main body having a shaft bore (5) with an inner peripheral surface in contact with the outer peripheral surface of a rotating shaft (11). However, D4 does not disclose a solid disk-shaped bracket main body and the shaft bore of the bearing of D4 is neither integrally formed **in** the bracket main body, nor is it a bottomed shaft bore.
7. D1 may be considered as the closest prior art forming the starting point of the invention. Starting from D1, the objective problem addressed by the present invention can be seen as providing a rotating shaft support member easy to manufacture and with improved dimensional accuracy, suitable for use in a small motor, as mentioned in the original application, column 1, lines 41 to 46.
8. The solution to this problem is to provide the rotating shaft support member with a bearing unit having a bottomed shaft bore according to the characterizing part of claim 1.
9. As already mentioned in paragraphs 6 to 6.2 above, no suggestion of such a solution can be found in any of the prior art documents, which disclose rotating shaft support members differing from the subject-matter of claim 1 by at least two independent features. Nor can it be derived from any combination of them, and more specifically not from the combination of D1 with D4,

which would not lead to a bottomed shaft member as set out in the characterizing part of claim 1.

10. The same considerations apply to independent claim 9 which relates to a motor comprising a rotating shaft support member according to claim 1 or any of claims 2 to 8 appended to claim 1.
11. For the foregoing reasons, in the Board's judgement, the subject-matter of claims 1 and 9 according to the present main request is considered to be new and involve an inventive step within the meaning of Articles 54 and 56 EPC. The application as amended meets the requirements of the EPC.

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 in the following version:

claims: 1 to 9, filed in the oral proceedings,

description: pages 1, 2, 2a, 3 to 14, filed in the oral proceedings,

drawings: sheets 1 to 4, filed in the oral proceedings.

The Registrar:

The Chairman:

D. Sauter

W. J. L. Wheeler