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Aktenzeichen / Case Number / N^o du recours : T 27/86 -3.2.1

Anmeldenummer / Filing No / N^o de la demande : 82 901 870.4

Veröffentlichungs-Nr. / Publication No / N^o de la publication : 0 081 537

Bezeichnung der Erfindung: Bearing device for poker vibrator

Title of invention:

Titre de l'invention :

Klassifikation / Classification / Classement : F16 C 19/54; A61 H 23/02

ENTSCHEIDUNG / DECISION

vom / of / du 5 December 1988

Anmelder / Applicant / Demandeur : Dynapac S.A.

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Einsprechender / Opponent / Opposant :

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Art. 56

Schlagwort / Keyword / Mot clé :

Inventive step (no)
Use of a principle of mechanics which is part
of the common general knowledge in a
particular device.

Leitsatz / Headnote / Sommaire

Europäisches
Patentamt

Beschwerdekammern

European Patent
Office

Boards of Appeal

Office européen
des brevets

Chambres de recours



Case Number : T 27/86 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 5 December 1988

Appellant : Dynapac S.A.
Rue de l'Industrie BP 48
F-77220 Touman-en-Brie

Representative : Madeuf, Claude Alexandre Jean
CABINET MADEUF
3, avenue Bugeaud
F-75116 Paris

Decision under appeal : Decision of Examining Division 115 of the European Patent Office dated 17 July 1985 refusing European patent application No. 82 901 870.4 pursuant to Article 97(1) EPC

Composition of the Board :

Chairman : P. Delbecque

Members : M. Liscourt

G. Paterson

Summary of Facts and Submissions

I. International patent application No. PCT/SE 82/00296 filed on 11 June 1982, published under international publication number WO 82/04467 and claiming the priority of a previous Swedish application of 12 June 1981, was given application number 82 901 870.4 after entry into European phase.

This application has been refused by a decision of the Examining Division dated 17 July 1985. Said decision was based on single Claim filed on 30 February 1985.

II. In the decision the Examining Division stated that the subject-matter of the claim though novel does not involve an inventive step. In support of its view, the Examining Division cited US-A-4 224 932 and extracts of technical books reflecting the knowledge of the man skilled in the art and held that it would be obvious for the man skilled in the art to apply the teaching of said books to the device described in the US document.

III. On 12 September 1985, the Appellant filed an appeal against the decision with a letter containing the grounds of appeal in accordance with Article 108 EPC. The appeal being not paid in the requested time limit, after being made aware of this fact the Appellant requested restitutio in integrum under Article 122 EPC and paid the corresponding fees as well as the appeal fee.

IV. In its interim decision dated 11 February 1987, the Board of Appeal stated that the rights of the Applicant were re-established in connection with the filing of an admissible appeal, and that the notice of appeal in the letter dated

6 September 1985 would therefore be considered as having been filed within two months after notification of the Decision of the Examining Division dated 17 July 1985.

- V. In response to a communication of the Board of Appeal dated 22 September 1987 which mentioned another technical book - *Dubbel Taschenbuch für Maschinenbau*, the Appellant filed observations on the 6 November 1987 and proposed a new claim which reads as follows:

"A poker vibrator having a cylindrical casing (1) and a rotor shaft (2) with an eccentric rotating inside the casing, a bearing arrangement comprising needle roller bearing means (3,4) mounted on either side of the said eccentric for carrying the said rotor shaft and for absorbing radial forces produced by the said eccentric, and a deep groove ball bearing means (5) for taking up axial forces on the shaft, the said ball bearing means including an inner race (8) disposed about the rotor shaft (2) and an outer race (6) disposed with a bearing sleeve (7), the said outer bearing race (6) provided with a positive radial clearance between it and the bearing sleeve (7), which exceeds the radial clearance specified for the needle roller bearing means (3,4) characterised in that the outer bearing race (6) is also provided with a positive axial clearance, such that radial forces are carried solely by the said needle roller bearing means."

In another communication dated 10 May 1988 the Board gave a provisional opinion about said new claim, suggesting that no inventive step was to be found in its subject-matter, and made the Appellant aware of the fact that the Board might in its discretion refuse any new claim submitted in response to said communication on the base of Rule 86(3) EPC, in which case a final decision would be issued on the base of the claim on file at this time.

VI. With his letter received on 1 July 1988 the Appellant filed observations based on a new claim repeating word for word the claim previously filed on 30 January 1985 and^{on} which the decision of the Examining Division was based.

Reasons for the Decision

1. The appeal is admissible, as stated in the interim decision of the Board.
2. The Board made use of his discretion to refuse at this stage of the procedure the new claims submitted on 1 July 1988.

The following discussion about patentability is therefore based on the claim filed 6 November 1987.

- 2.1 The document reflecting the nearest state of the prior art is the document US-A-4 224 932 already cited by the Examining Division.
- 2.2 Said document discloses a vibratory massage unit having a cylindrical casing (58) and a rotor shaft (23) with an eccentric (67) rotating inside the casing, a bearing arrangement comprising bearing means (47, 51, 53 and 48, 52, 54) mounted on either side of said eccentric (67) for carrying the said rotor shaft and for absorbing radial forces produced by the said eccentric, both bearing means being ball bearings for taking up axial forces (as well as radial forces) on the shaft, said ball bearing means including an inner race (47, 48) disposed about the rotor shaft (23, 44) and an outer race (53, 54) disposed with a bearing sleeve (55, 59).

2.3 The vibrator which is subject-matter of the claims under appeal differs from this state of the art by the following features:

- the vibratory device is a "poker vibrator";
- on one side of the eccentric the ball bearing is replaced by a needle bearing;
- on the other side a needle bearing is added to the existing ball bearing;
- said remaining ball bearing is of the deep groove type, the outer race of which is provided with positive radial and axial clearance, such that radial forces are carried solely by the needle roller bearing means.

2.4 Because of these differences in comparison to the nearest state of the art, the claimed device is novel.

2.5 The first difference is that the device is a "poker" vibrator. As this designation which had been objected by the Examining Division has not been clearly shown as able to restrict the claimed device to a known category but as it has only been shown that it was usual for the Appellant himself to designate such devices this way when used as concrete vibrator, said designation cannot be considered as restrictive in any way.

2.6 It has been noticed that the bearings of such vibrators are subjected to very strong stresses and that they are destroyed after a short time of utilisation.

The first solution which would come to the man skilled in the art to remedy this situation would be to provide the device with bearings of larger dimensions, which would lead

to an increased diameter of the whole device, which is not suitable for the use as concrete vibrator.

The purpose of the invention is to obtain a longer working life of the device without increasing its external dimensions.

The drawbacks were easy to recognise and the man skilled in the art was directly led to the setting of the above problem which cannot therefore be considered as inventive per se.

- 2.7 As regards the further differences consisting in replacing on one side the ball bearing by a needle bearing and adjoining on the other side a needle bearing to the ball bearing whereby said bearing is chosen of the deep groove type the outer race of which is given both axial and radial clearances, it belongs to the notional man skilled in the art who is also skilled in the field of mechanics to look at the stresses which have to be supported by the different bearings when the device is in operation in a vertical position and to choose the adequate ones for each location and he would therefore look in the specialised literature in the field of bearings if the problem had already been solved.

Among other technical books the "Dubbel, Taschenbuch für den Maschinenbau, 13. Auflage, 1974, Fig.53, page 738 and 739" proposes a solution for holding vertically rotating shafts, in which one end of the shaft is supported in a housing through a roller bearing and a ball bearing which are disposed side by side, the inner races of which are tightly fastened on the shaft while the external race of the roller bearing which is indicated as fulfilling the function of supporting the radial efforts is normally held in the housing while the external race of the ball bearing

- which is of the deep groove type - has play and is said to absorb the axial efforts.

2.8 The man skilled in the art would have therefore been led towards the solution to his problem except that he had to think of replacing the roller bearings by needle bearings, the properties and relative dimensions of which are known in the field of mechanics so that such a choice belongs to the normal duty of the skilled person.

3.0 In the different letters, the Appellant has brought a certain number of arguments which are discussed individually below:

3.1 The term "Poker Vibrator" would define a precise category of devices.

The only evidence which as been given is constituted by literature emitted by the Appellant himself on commercial purposes. This fact would not suffice for the Board to be sure that this denomination is not a fancy name given to a series of products of one firm. Such a term cannot be used to delimitate the scope of a claim which should preferably contain terms which are to be found in dictionaries in order to be able to be translated into other languages.

3.2 Many arguments have been brought by the Appellant which refer to a precise "prior poker vibrator" shown in a document (Exhibit D) which has no precise date and which cannot therefore be taken into account as well as the arguments based on it.

3.3 It has been challenged that in the "Dubbel" technical manuel on Figure 53 only a radial clearance is to be seen and that the outer race of the ball bearing is held tightly in the axial direction by the cover.

In the Board's view, the notional man skilled in the art must be considered as using the teaching of the technical manuel Dubbel and would understand from this manuel that in order to perform the rotating assembly according to Figure 53, the outer race (Mantel) of the ball bearing must have play (Spiel hat), that is to say not only radial but also axial clearance otherwise said outer race would not be able to move radially in order to allow the efforts to be supported only by the roller bearings. It is furthermore observed that on Figures 50 to 51 shown on page 738 examples of bearings are shown, wherein caps fulfill the function of axial tightening of outer bearing races and in each of these figures a clearance is to be seen between said cap and the housing.

Therefore, the measure consisting of disposing a clearance in both directions does not add anything inventive to the device claimed previously and already considered as not inventive.

- 3.4 It has been asserted that the features of the invention produce improved results over the known art and evidence has been given.

Comparative tests have not been performed by comparison between the device representing the nearest state of the art and the device according to the invention. In the present case, the device which serves as "old design" is clearly shown but does not correspond to any one of the devices which fulfill the required conditions to be considered as even part of the state of the art; although the drawings have been performed on the 11 March 1981 and the tests of this vibrator have been performed in year 1977, there is no indication if this device had been made available to the public before the priority date.

For these reasons, the results of said comparative tests communicated for the first time on 1 July 1988 cannot be taken into consideration for judging inventive step.

4. For the above reasons, the vibrator which is subject-matter of the single claim cannot be considered as inventive having regard to the state of the art.

5. It is pointed out that the subject-matter of the above discussed claim is a particular embodiment of the claim refused by the Examining Division and which has been proposed again in the reply of the Appellant received on 1 July 1988. It follows therefrom that the subject-matter of said claim, being broader, even if it was admissible would not be inventive either, on the same grounds.

Order

For these reasons, it is decided that:

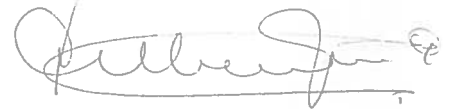
The appeal is dismissed.

The Registrar:



S. Fabiani

The Chairman:



P. Delbecque



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