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Datasheet for the decision of 12 June 2007

Case Number: T 0018/05 - 3.2.01

Application Number: 95914806.5

Publication Number: 0745195

IPC: F16C 41/04

Language of the proceedings: EN

Title of invention:
Method of mounting a retainerless saddle of a linear motion bearing

Patentee:
THK CO. LTD.

Opponent:
INA-Schaeffler KG

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty - yes"
"Inventive step- yes"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0018/05 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 12 June 2007

Appellant: (Patent Proprietor)
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Decision under appeal: **Decision of the Opposition Division of the European Patent office posted 27 October 2004 revoking European Patent No. 0745195 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: S. Crane
Members: J. Osborne
G. Weiss

Summary of Facts and Submissions

I. The appeal is directed against the decision posted 27 October 2004 revoking European patent No. 0 745 195.

II. The following document played a role during both the opposition and appeal procedures:

D1: Catalogue "Linear recirculating ball bearing and guideway assemblies Series KUE", INA Lineartechnik oHG, Publication KUE, December 1991.

The following document was filed during the appeal procedure on 11 May 2007:

D4: Catalogue "Das Linear-Programm", Deutsche Star GmbH, April 1991, two cover pages and a section entitled "Präzisions-Kugelgewindetriebe", pages 3.1.1 to 3.1.33.

III. The opposition division found that the subject-matter of claim 1 was not new in the light of the content of D1.

IV. At oral proceedings on 12 June 2007 the appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of claims 1 and 2 submitted as main request with the statement of grounds of appeal on 8 February 2005. The respondent requested that the appeal be dismissed.

V. Claim 1 according to the appellant's request reads:

"A method comprising the step of providing a retainerless saddle (6) and a ball holder (1,1'11, 11'11",21,21",31,41,41',53,63,) holding balls (7) in which the ball holder is located in a saddle (6) having a bearing body (4) and a pair of end caps (5) attached to said bearing body, the ball holder comprising an elongated shaft (2,2'20,20'20"22, 22'22",33,43,43' 52,62) having a plurality of ball contact surfaces (3,3'31); said elongated shaft 2,2'20,20'20" 22,22'22",33,43,43'52,62) having an axial length at least equal to that of the bearing body; said plurality of ball contact surfaces (3,3'31,35,45,46) being provided at the circumstantial *(sic)* surface of said elongated shaft (2,2'20,20'20",22,22'22",33,43,43', 52,62) along the axis thereof; each of said ball contact surfaces (3,3'31,35,45,46) being positioned adjacent to each of said ball contact grooves (8) provided within the bearing body such that each of said ball contact surfaces (3,3'31,35,45,46) of said shaft and each of said ball contact grooves (8) of the bearing body form a separate raceway for the balls (7), and the outer configuration of the cross-section of said ball holder being substantially identical to that of the cross-section of a track shaft part (T) of a rail the method further comprising the step of displacing said ball holder shaft out of said saddle by said track shaft part (T) of a rail (R) by moving the saddle to provide a retainerless linear motion bearing assembly, said balls then being retained by said saddle and said rail."

Claim 2 defines features additional to those of claim 1.

VI. The appellant's arguments may be summarised as follows:

In the contested decision the opposition division took the view that the feature of "a retainerless saddle" was neither essential nor technically related to the claimed method as no method step was constituted. It was further stated that for the method of claim 1 it is irrelevant whether or not the saddle is retainerless and that this feature is not restrictive for the subject-matter of claim 1. However, the claimed method requires providing a retainerless saddle with a ball holder and then displacing the ball holder by the track shaft to provide a retainerless linear motion bearing assembly. D1, on the other hand, consistently shows a linear motion bearing having a ball retainer and provision to accommodate it. Furthermore, D1 states that the carriages and guideways can be supplied individually from which it follows that a retainer must be present. Once it is accepted that the subject-matter of claim 1 is novel, inventive step automatically follows.

VII. The respondent countered essentially as follows:

The method steps of claim 1 are disclosed in D1. The feature "retainerless" is a product feature which is without technical meaning and which does not contribute to the claimed method. In accordance with case law a feature having no technical meaning cannot be considered when assessing novelty. Furthermore, the absence of a retainer is not a feature resulting from the present process claim and therefore need not be a feature of the product which in accordance with Article 64(2) EPC also would benefit from protection.

D1 moreover discloses on pages 6 and 17 when considered together an embodiment without a retainer. Indeed, it would be pointless to provide a retainer since it would render redundant the dummy plastic guideway and mounting rail shown on page 17 of D1. D1 nowhere explicitly discloses a retainer and even if the elements which the appellant regards as being wires were in fact so, there still would be no disclosure of them being able to retain the balls. The lack of disclosure in D1 of an abutment between the dummy guideway or mounting rail and the support rail cannot establish novelty because claim 1 does not require this feature.

Even if the subject-matter of claim 1 were found to be new with respect to D1 it would not involve an inventive step since it would involve no more than the deletion of a superfluous element, namely a ball retainer, for the purpose of simplification and cost reduction.

Also D4 discloses a method as specified in claim 1 in respect of mounting a nut equipped with recirculating ball bearings onto a drive screw.

Reasons for the Decision

1. The patent relates to a linear motion bearing comprising a saddle which is carried by ball bearings on a support rail. The saddle comprises a bearing body and two end caps. The bearing body has ball contact grooves along which the balls roll during motion of the saddle along the support rail and the end caps provide

a passage for the balls between one contact groove and another such that the balls recirculate. In the assembled form of the bearing the balls in the contact grooves are held in place by the support rail. Conventionally when the saddle of a linear motion bearing is not on the support rail the balls are held in place by a retainer such as a wire which is permanently mounted on the saddle. The linear motion bearing according to the present patent has no such retainer and the subject-matter of claim 1 relates to a method of mounting the saddle onto the support rail in such a way that the balls nevertheless remain in the contact grooves. A ball holder which retains the balls before the bearing is assembled is displaced out of the saddle as it is moved onto the support rail and so is not present in the bearing in its assembled form.

Late-filed evidence - Article 114(2) EPC

2. D4 was filed approximately one month before the date set for oral proceedings. Although this was within the time limit set by the board for the filing of written submissions it was after expiry of the period for opposition according to Article 99(1) EPC. Since the document was not filed in response to an amendment of claim 1 it was not submitted in due time within the meaning of Article 114(2) EPC. In accordance with consistent case law the exercise of discretion as to whether such a document is to be disregarded is in accordance with its *prima facie* relevance to the case. D4 relates to a drive screw equipped with a nut having a series of recirculating balls running in a helical groove in correspondence with the thread on the shaft. A ball holder in the form of a plain tubular housing

retains the balls in the nut before it is mounted on the screw. The device of D4 is not a linear bearing as required by claim 1 ("… to provide a retainerless linear motion bearing assembly"). The device of D4 furthermore does not comprise "a plurality of ball contact surfaces … along the axis of" the shaft of the ball holder. It follows that D4 is *prima facie* not highly relevant to the decision in the present case and the board exercises its discretion to disregard it in accordance with Article 114(2) EPC.

Novelty (Article 54(2) EPC)

3. D1 contains details of various linear motion bearing and support rail assemblies. It mentions component parts of the assemblies and various aspects of their use such as assembly of the saddle onto the support rail. It also shows a series of part-sectioned full size technical drawings. However, the matter of ball retention is nowhere explicitly addressed and it is therefore necessary to determine the skilled person’s implicit understanding of the document.

3.1 The saddle ("carriage" in D1) is normally supplied with a dummy plastic guideway (reference MKD) "in order to protect the rolling elements". The saddle is equipped at its ends with "wipers" supplemented by sealing strips to give all-round sealing. In order to reduce the risk of damage to the seals during mounting of the saddle on the support rail a mounting rail which is chamfered at one end optionally may be used. The disclosed procedure for mounting the saddle onto the support rail is to push the saddle onto the mounting rail from the chamfered end, align the mounting rail

carrying the saddle against the support rail and push the saddle onto the support rail. D1 is silent, on the other hand, as regards the removal of the dummy plastic guideway and its replacement by the mounting rail. From this the skilled person will deduce that whilst the mounting rail optionally may be used to prevent damage to the seals, removal of the dummy plastic guideway involves no particular risk of the balls leaving the contact grooves, implying that the saddle does comprise a ball retainer.

3.2 In every detailed end view of the linear motion bearings in D1 the base of the contact groove has a depression which at least in the sectional views contains a black dot. D1 is silent concerning the feature represented by this dot but its presence in the drawings supports the skilled person's interpretation in the light of the mounting procedure discussed in 3.1 above that the saddle comprises a ball retainer.

3.3 The respondent argues that even if the dots were representative of wires there is no disclosure that they would act as ball retainers. However, the board accepts the appellant's argument that ball retainers are a feature which the skilled person would expect to be present in a linear motion bearing assembly. In such a situation it is not sufficient in order to establish a lack of novelty for the respondent to establish that D1 does not explicitly disclose a retainer. The respondent carries the burden of establishing that the absence of a retainer is disclosed and this it has failed to do.

3.4 The respondent furthermore argues that the feature of a "retainerless" saddle is a product feature which is without technical meaning and which does not contribute to the claimed method. However, the first step of the method clearly specifies "providing a retainerless saddle". Moreover, the end result of the claimed steps is "to provide a retainerless linear motion bearing assembly". By deleting the retainer problems associated with it, such as increased complexity in construction of the saddle and risk of dislocation of the retainer resulting in increased friction, are avoided. The absence of the retainer is the core of the invention and is the basis for adopting method steps which prevent the balls from falling out of the contact grooves. The steps of claim 1 relating to the replacement of the ball holder by the support rail may be equally applicable whether or not a ball retainer is present. Nevertheless, this does not detract from the fact that the term "retainerless" in claim 1 is neither devoid of technical meaning nor lacking any contribution to the claimed method.

4. The board concludes from the foregoing that the subject-matter of claim 1 is new with respect to D1.

Inventive step (Article 56 EPC)

5. Although the contested decision only concerned novelty, in agreement with both parties the board has exercised its discretion in accordance with Article 111(1), second sentence, EPC and continued to examine inventive step.

6. D1 may be considered as the closest state of the art for consideration of inventive step. It follows from the above considerations in respect of novelty that the ball retainer of D1 is a feature which is essential to ensuring that, in the absence of any special procedures for removing the dummy plastic guideway, the balls are satisfactorily retained in the saddle. Whilst the skilled person may have regarded the ball retainer as a necessary evil in terms of both manufacture and operation of the bearing, in the absence of a suggestion in the state of the art as to how loss of the balls could be avoided, he would not have seriously contemplated deletion of the retainer. In the light of these considerations the board concludes that the subject-matter of present claim 1 involves an inventive step. Since method claim 2 contains all steps of claim 1 the same conclusion applies equally to that claim.

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 maintain the patent on the basis of the following documents:

   – claims 1 and 2 submitted as main request with the statement of grounds of appeal on 8 February 2005;

   – description and drawings as granted.

The Registrar: The Chairman:

A. Vottner S. Crane