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**Datasheet for the decision  
of 23 October 2013**

**Case Number:** T 1345/09 - 3.4.01

**Application Number:** 02012497.0

**Publication Number:** 1371991

**IPC:** G01P 3/44

**Language of the proceedings:** EN

**Title of invention:**

Device for determining the rotational speed of a bearing

**Applicant:**

SKF INDUSTRIE S.p.A.

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 123(2)

**Relevant legal provisions (EPC 1973):**

EPC Art. 56

**Keyword:**

"Inventive step (yes) - after amendment"

"Added subject-matter (no)"

**Decisions cited:**

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**Catchword:**

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Case Number: T 1345/09 - 3.4.01

**D E C I S I O N**  
of the Technical Board of Appeal 3.4.01  
of 23 October 2013

**Appellant:**  
(Applicant)

SKF INDUSTRIE S.p.A.  
Via Arcivescovado 1  
I-10121 Torino (IT)

**Decision under appeal:**

**Decision of the Examining Division of the  
European Patent Office posted 17 December 2008  
refusing European patent application  
No. 02012497.0 pursuant to Article 97(2) EPC.**

**Composition of the Board:**

**Chairman:** G. Assi  
**Members:** F. Neumann  
C. Schmidt

## **Summary of Facts and Submissions**

I. European patent application 02 012 497.0 was refused by a decision of the examining division dispatched on 17 December 2008, pursuant to Article 97(2) EPC.

The examining division refused the application for failure to comply with Article 123(2) EPC, Article 56 EPC 1973 and Article 84 EPC 1973.

II. The applicant (appellant) lodged an appeal against the decision on 17 February 2009 and paid the appeal fee on 16 February 2009. The statement setting out the grounds of appeal was filed on 17 April 2009.

III. With the statement setting out the grounds of appeal, the appellant filed a set of claims 1-15 to replace the claims on which the contested decision was based.

It was submitted that the new claims overcame the objection of added subject-matter. Moreover, arguments were filed addressing the issues of clarity and inventive step.

IV. On 28 June 2013, the Board issued a summons to oral proceedings, scheduled to take place on 23 October 2013.

V. In a communication dated 20 August 2013, the Board made some provisional remarks with regard to inventive step and clarity.

VI. During the oral proceedings before the Board, the appellant filed a new set of claims 1-9 to replace all claims on file. It was requested that the decision

under appeal be set aside and that a patent be granted on the basis of these claims 1-9 filed during the oral proceedings of 23 October 2013.

VII. Independent claim 1 reads:

*"A sensing device (1, 1a, 1b, 1c, 1d, 1e) for the running parameters of a railway bearing (2), wherein said railway bearing (2) is a tapered roller bearing including a rotating race (3) having a rotational axis (A) and a non-rotating race (4), the device comprising:*

*a substantially L-shaped sealing shield (5) which is adapted to be mounted on a radially inner surface of the the non-rotating race (4) and which consists of a cylindrical wall (9) adapted to be mounted inside and in contact with the non-rotating race (4) and an annular wall (10) extending transversally to the axis (A) between the two races (3,4);*

*a sealing covering (7) integral with a free end of the annular wall (10) of the shield (5) and adapted to be in contact with a sliding surface (3s, 11s) that forms part of or is integral with a radially outer surface of the rotating race (3);*

*an element (6) adapted to be shrink-fit onto the radially outer surface of the rotating race (3) and comprising a radial wall (12), the radial wall (12) of the element (6) being arranged axially outside the shield (5), the element (6) being provided with teeth and notches (17, 18) or alternating magnetised areas; and*

*a sensor (16) facing the element (6) and adapted to sense the rotation of the teeth and notches (17, 18) or alternating magnetised areas, wherein the sensor (16) comprises a main body (20) and fixing means (21) adapted to fix the main body (20) of the sensor (16) in a removable manner onto an external surface (19) of the annular wall (10) of the shield (5) in a position which is axially outside the sealing shield (5) and the railway bearing (2)."*

Claims 2-9 are dependent claims.

## **Reasons for the Decision**

1. The appeal is admissible.
2. Article 123(2) EPC
  - 2.1 Claim 1 is based on claim 1 of the originally-filed application. The structural details of the railway bearing are derivable from the drawings and from page 3, lines 18 to 23. The additional details of the sealing shield and sealing covering are found on page 4, lines 5-16 and the drawings of the originally-filed application. Original claim 2, the drawings and page 5, lines 9-25 provide the basis of disclosure for the element 6. The location and manner of mounting the sensor is derived from page 6, lines 1-10 of the original application.

The Board notes that the objection which was raised by the examining division in the contested decision has been overcome: the sensor is now defined as being

located axially outside both the sealing shield and the railway bearing.

Dependent claims 2-8 are based on original claims 5-8, 10, 13 and 14 respectively, the geometrical details of the element 6 being derived from the drawings. Claim 9 is based on original claim 17 in combination with page 6, line 22 to page 7, line 5.

2.2 The amendments to the claims therefore all have a basis in the application documents as originally filed and consequently do not infringe Article 123(2) EPC.

3. Article 84 EPC 1973

3.1 The Board has no objections under Article 84 EPC 1973.

4. Inventive step - Article 56 EPC 1973

4.1 The following documents will be referred to in the assessment of inventive step:

D1: EP-A-0 438 624;

D6: US-A-4 946 296;

D8: EP-A-0 657 738.

4.2 In the contested decision, the examining division argued that the subject-matter of claim 1 was not inventive irrespective of whether the disclosure of D1 or that of D8 was taken as the closest prior art.

In view of the amendments made to claim 1, the Board is of the view that that D1 may no longer be regarded as the closest prior art. Instead, the Board considers the

disclosure of D6 to be the most relevant document cited in the search report.

- 4.3 The subject matter of claim 1 is directed to a sensing device for a railway bearing essentially comprising a sealing shield, a sealing covering, an encoder element and a sensor. D6 discloses a similar unit made up of the same basic components but for use in wheel bearings of motor vehicles.

The appellant submitted that the technical fields of automotive bearings and railway bearings were so different that the skilled person working in one field would not consult the other field for solutions to what may appear to be similar problems. The technology in each field had developed independently of the other field with very little cross-fertilisation. For this reason, although the skilled person looking to provide a sensing device for a railway bearing may well have been aware of the teaching of D6, he would certainly not have been inspired to use it in any way.

It is clear to the Board that the design of components for railway and automotive bearings will be subject to mechanical constraints specific to the type of bearing and the intended use thereof. Nevertheless, what D6 in principle discloses is a unit which is to be positioned between the two races of a bearing and which serves to seal the bearing unit and to act as a rotation sensor. The Board is of the opinion that, irrespective of the mechanical properties and intended use of the bearing, the basic structure of the unit of D6 can be applied to any type of bearing. The unit is provided with a sealing element for sealing the annular gap between the

inner and outer races, an encoder for enabling the rotation of the rotating race to be detected and a sensor device which cooperates with the encoder for monitoring the rotation thereof. In this respect, the Board considers that the skilled person would take the basic structure of the sealing unit of D6 into account when designing a sealing and rotation sensing element for a railway bearing despite the fact that D6 is directed to wheel bearings for motor vehicles.

- 4.4 In the embodiment of Figure 1 of D6, in order to mount the sealing shield to the non-rotating race, a reinforcing element is provided which is press-fitted into the bore of the housing alongside the outer race. A tongue extends from the reinforcing element and engages a notched recess in the housing to lock the sealing shield in place. The sensor is inserted into a recess in the reinforcing element of the shield and vulcanised into place by means of an elastic material against a radially extending portion of the sealing shield.
- 4.5 In contrast to this construction, the sealing shield of claim 1 of the present application consists of a cylindrical wall which is adapted to be mounted in contact with the non-rotating race and an annular wall which extends radially between the two races. This simplifies not only the shape of the sealing shield but also the manner in which it can be mounted to the non-rotating race. The reinforcing element and locking tongue of D6 are dispensed with. Furthermore, in claim 1 of the present application, the sensor is provided with a fixing means which is adapted to mount the sensor in a removable manner onto the external



surface of the radially extending annular wall of the shield. This simplifies the mounting of the sensor and allows the sensor to be removed, which has the obvious advantage that defective sensors can be easily repaired or replaced.

4.6 The form of the sealing shield which is now specified in claim 1 and the specific details of the manner in which the sensor is attached to the shield have been derived from the description. The Board notes that, in accordance with Article 92 EPC, the European search report is drawn up on the basis of the claims, with due regard to the description and drawings. In view of the fact that a number of documents cited in the search report disclose a sealing shield having a cylindrical portion adapted to be mounted inside and in contact with the non-rotating race and an annular wall extending between the two races transversely to the rotation axis, it would appear that this feature has indeed been searched. Moreover, since claim 15 as originally filed defined a "*fixing means*" and alluded to a removable attachment of the sensor to the shield (as opposed to the more permanent attachment solutions defined in original claim 16), the removable attachment being discussed in the description (see page 6, lines 1-10), the Board is of the opinion that the claimed features relating to the sensor mounting may also be considered to have been searched.

4.7 In the opinion of the Board, the construction defined in claim 1 does not derive in an obvious manner from the disclosure of D6 taken per se. Moreover, none of the cited prior art documents would lead the skilled person to modify the sealing shield and sensor mounting

of D6 in the manner defined in present claim 1. In particular, whilst D8 does employ a sealing shield consisting substantially of a cylindrical portion and a radial portion, as defined in present claim 1, the Board notes that modifying the shield of D6 in accordance with the disclosure of D8 would amount to not only a mere modification of the sealing arrangement of D6, but to a complete abandonment of the teaching of D6. Moreover, even if the teaching of D8 were to be adopted, the Board notes that neither D8 nor any of the remaining prior art documents suggest providing a mechanism for enabling the removable attachment of the sensor onto an external surface of the annular wall of the shield.

4.8 Even starting from the disclosure of D8, as the examining division did in the contested decision, the subject matter of claim 1 may not be arrived at in an obvious manner. The examining division argued in the contested decision that, in view of the multi-part construction of D8, the skilled person would try to simplify the design by reducing the number of components and would adopt a solution as is known from D6. In view of the amendments to claim 1, this argument no longer applies. Neither D8 nor D6 suggest to mount the sensor in a removable manner onto an external surface of the radial wall of the sealing shield. Indeed, the relative spatial arrangement of encoder ring 46 and the sensor 10 in D8 would prevent the sensor being placed on the radial wall of the sealing shield.

4.9 The subject matter of claim 1 therefore does not derive in an obvious manner from the teaching of the cited prior art.

5. In conclusion, the appellant's request is allowable.

**Order**

**For these reasons it is decided that:**

1. The decision under appeal is set aside.
  
2. The case is remitted to the department of first instance with the order to grant a patent with claims 1 to 9 received during the oral proceedings of 23 October 2013 and a description to be adapted.

The Registrar:

The Chairman:

R. Schumacher

G. Assi