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D E C I S I O N
of 28 August 1995

Case Number: T 0054/93 - 3.2.1

Application Number: 88200432.8

Publication Number: 0286150

IPC: F16C 33/78, F16J 15/32, B60B 27/00

Language of the proceedings: EN

Title of invention:
Seal for the hubs of vehicle wheels

Patentee:
RIV-SKF OFFICINE DI VILLAR PEROSA S.p.A

Opponent:
FAG Kugelfischer Georg Schäfer KGaA

Headword:
-

Relevant legal provisions:
EPC Art. 108, 122, 56

Keyword:
"Admissibility of the appeal (yes)"
"Restitutio (not applicable)"
"Inventive step - after amendment - yes"

Decisions cited:
-

Catchword:
-



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Boards of Appeal

Chambres de recours

Case Number: T 0054/93 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 28 August 1995

Appellant: RIV-SKF OFFICINE DI VILLAR PEROSA S.p.A.
(Proprietor of the patent) Via Mazzini 53
I-10123 Torino (IT)

Representative: Lotti, Giorgio
c/o Ing. Barzanò & Zanardo Milano S.p.A.
Corso Vittorio Emanuele II, 61
I-10128 Torino (IT)

Respondent: FAG Kugelfischer Georg Schäfer KGaA
(Opponent) Postfach 12 60
D-97402 Schweinfurt (DE)

Representative: -

Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 1 December 1992
revoking European patent No. 0 286 150 pursuant to
Article 102(1) EPC.

Composition of the Board:

Chairman: F. A. Gumbel
Members: P. Alting van Geusau
J. Saisset

Summary of Facts and Submissions

- I. European patent No. 0 286 150 was granted with effect from 20 February 1991 on the basis of European patent application No. 88 200 432.8 filed on 8 March 1988.
- II. Notice of opposition was filed on 19 November 1991 on the grounds of Article 100(a) EPC. In respect of an alleged lack of inventive step the opposition was *inter alia* supported by the documents:

D1: DE-A-2 841 806

D2: US-A-4 501 431

D3: US-A-4 643 436

D4: GB-A-2 018 914

- III. By decision dated 1 December 1992 the Opposition Division revoked the patent.

The Opposition Division was of the opinion that the subject-matter of an amended Claim 1, filed with letter dated 6 May 1992, could not be regarded to involve an inventive step, since the combination of its features was obvious from the prior art disclosed in D1 taken in combination with the teachings of D4.

- IV. An appeal was filed against this decision on 14 January 1993. Payment of the appeal fee was registered on 19 January 1993.
- V. With a communication pursuant to Article 108 and Rule 65(1) EPC dated 28 October 1993, the Appellant was informed that a written Statement of Grounds of Appeal had not been filed.

- VI. With response dated 5 November 1993, received by the EPO on 8 November 1993, the Appellant filed a request for re-establishment of rights in accordance with Article 122 EPC and paid the relevant fee.

Together with the above request the Appellant filed a Statement of Grounds of Appeal, dated 22 March 1993, and evidence in support of his assertion that this document had been posted on that same day.

Furthermore the Appellant filed amended Claims 1 and 2 as well as drawings in order to explain the functioning of the sealing arrangement in accordance with the claimed subject-matter.

With letter dated 29 November 1993 further documents in support of the Appellant's submissions in respect of the asserted observation of the time limit for filing of the Statement of Grounds of Appeal were filed.

- VII. With communication dated 27 June 1994 the Board informed the parties that having regard to the case law of the Boards of appeal and taking into account the evidence in support of the Appellant's submission that the Statement of Grounds of Appeal was sent to the EPO within the time limit according to Article 108 EPC, this statement should be considered to have been filed in due time.

The Respondent was invited to present his comments within a time limit of 2 months.

- VIII. Having not received a response from the Respondent, the Board expressed in a second communication dated 28 December 1994 the provisional opinion that, provided

that the current Claim 1 was amended to meet the requirement of Article 123(3) EPC, such a new Claim 1 would appear to be an acceptable basis for maintenance of the patent in amended form.

IX. With letter dated 27 January 1995 the Appellant filed new Claims 1 and 2 and a new description, pages 1 to 3.

By implication the Appellant requests setting aside of the decision under appeal and maintenance of the patent on the basis of these amended documents.

Claim 1 of this set of claims reads:

"1. A seal for vehicle wheel hub bearings consisting of a rotating inner race and a stationary outer race, the seal comprising:

- a central body rigidly connected to a metal insert driven onto the outer race of the bearing;
- an appendix extending from the body of the seal and being compressed onto the outer race of the bearing to form static seal thereon;
- a dirt guard lip forming labyrinth seal with a toroidally shaped surface of the inner race of the bearing;
- two sealing lips, defined as outer and main lip, extending from said central body and performing dynamic seal with said toroidally shaped surface of the inner race of the bearing and forming a grease containing chamber with it; said outer lip being oriented towards the outside of the bearing to exploit the centrifugal effect deriving during operation from the rotation of the toroidally shaped surface of the inner race; characterised in that the main lip is also oriented towards the outside of the bearing, like said outer lip,

to exploit the same centrifugal effect; a third innermost sealing lip, extending from said central body, being designed so that it skims said toroidally shaped surface during operation to enable the grease contained in the space between the bearing and the seal to flow towards the outside of the bearing."

- X. In support of his requests the appellant essentially relied upon the following submissions:

Re-establishment of rights under Article 122 EPC

In order to give proof that due care was taken to observe the time limit established by Article 108 EPC and that, to the Appellant's knowledge, the Statement of Grounds of Appeal had been sent to the EPO on 22 March 1993 i.e. in due time, the following was relied upon

- a DHL courier invoice No. 47981MHQ dated 31 March 1993 showing that on 22 March 1993 a document ref. 489931750 weighing 0.5 kg was sent to the EPO,
- a copy of a letter dated 22 March 1993 sent to the Appellant resuming the arguments given by the representative in the Statement of Grounds of Appeal together with an invoice (Nr 00423) for preparing and filing the Statement of Grounds of Appeal,
- a statement of the representative's secretary, charged to send the Statement of Grounds of Appeal by DHL courier, in which she declares that she took care in mailing an envelope containing the Appeal Statement of Grounds dated 22 March 1993 concerning the patent in suit to the EPO in Munich via DHL ref. 489931750;
- a copy of a transfer order dated 25 May 1993 wherein the Appellant ordered his bank to pay to the representative an amount relating to invoices 365, 484, 483 and 423;

- a copy of a credit note dated 2 June 1993 in which the representative's bank confirmed that the amount payed by the Appellant was credited on the representative's bank account,
- copies of invoices 365, 484, 83 and 423 showing that the totality of the amounts of these invoices added up to the amount received by the representative.

Inventive step

In the decision under appeal it was stated that the single difference between the subject-matter of Claim 1 and the arrangement disclosed in D1 is the use of three instead of two flexible sealing lips.

However, the two lip arrangement of D1 is a Y-arrangement which is pressed against the opposite race. Accordingly, pressure and temperature on, in particular, the innermost lip reach high values and wear is high due to the increased friction between this inwardly pointing sealing lip and the surface of the race. The pressure also prevents any outflow of grease needed for lubrication of the sealing lip itself. It thus follows that the functioning of this known seal is fully different when compared to the seal defined in the amended Claim 1 of the patent in suit.

D4 discloses the use of a seal with three lips but also here there is no indication of a functioning in accordance with the present patent.

A combination of the teachings of D1 and D4 would therefore not lead to the subject-matter of Claim 1 under consideration and, moreover, the skilled person

did not have any incentive to combine the sealing arrangements of these disclosures and to arrange them such that the effects of the seal in accordance with the amended Claim 1 are achieved.

- XI. The Respondent (Opponent) did not file any response or request.

Reasons for the Decision

1. *Admissibility of the appeal*

1.1 The appeal complies with the requirements of Articles 106 to 107 and Rules 1(1) and 64 EPC.

1.2 Considering the requirement that within four month after the date of notification of the decision, a written statement setting out the grounds of appeal must be filed (Article 108 EPC, last sentence), the Board adopts the principles applied in the decision T128/87 (OJ EPO 1989, 406) (see also T 243/86 of 9 December 1986 and T69/86 of 15 September 1987), according to which proof of the actual filing of a document is considered to be furnished if on the strength of the circumstances the likelihood that the item was filed is considerably greater than that it was not (see point 6.1 of T 128/87).

1.3 Considering the evidence provided by the Appellant, in particular the documents giving proof of each of the steps of the procedure that would be expected when a professional representative files a Statement of Grounds of Appeal in the name of an Appellant, including the transfer of the document to the DHL courier service and payment of the services provided, there is in the Board's opinion no reasonable doubt that the Statement

of Grounds of Appeal dated 22 March 1993, with the same content as the Statement of Grounds of Appeal filed with the Appellant's letter dated 5 November 1993, was in fact posted on 22 March 1993, thus early enough that it should have been received by the EPO in due time, i.e. before 13 April 1993.

- 1.4 Therefore, in the Board's judgment the Statement of Grounds of Appeal is to be considered as having been filed within the period stipulated in Article 108 EPC.

Consequently the request for restitutio in integrum in accordance with Article 122 EPC dealing with non-observance of a time limit does not apply. Hence, the respective fee paid by the Appellant should be reimbursed.

- 1.5 All the relevant requirements being fulfilled the appeal is admissible.

2. *Amendments*

- 2.1 The current Claim 1 is based on the granted Claim 1, respectively, the originally filed Claim 1.

Apart from being redrafted in accordance with Rule 29(1) EPC to take account of the prior art disclosed in DE-A-2 841 806 (D1), Claim 1 now essentially includes further details concerning the features:

- (a) an appendix extending from the body of the seal and being compressed onto the outer race of the bearing to form static seal thereon,
- (b) a grease containing chamber formed by the main and outer lip and the toroidally surface of the inner race of the bearing,

(c) the third innermost sealing lip enables the grease contained in the space between the bearing and the seal to flow towards the outside of the bearing.

Feature a is supported by the originally filed description, page 4, lines 13 to 16 and the patent, column 1, lines 49 to 52.

Feature b is supported by the originally filed description, page 4, last line to page 5, line 2 and the patent, column 2, lines 4 to 6.

Feature c is supported by the original description, page 5, lines 3 to 7 and the patent column 2, lines 7 to 12.

2.2 Claim 2 is based on the granted Claim 4 and is now clarified in that the arrangement of the outermost lip allows sealing against the toroidally shaped surface in case of misalignment of the bearing as is disclosed on page 4, penultimate paragraph of the originally filed description (see also column 1 line 57 to column 2, line 3 of the patent).

2.2 The description essentially corresponds to the granted description but now additionally includes a reference to D1.

2.3 In view of these assessments no objections under Article 123(2) EPC arise against the present claims or description.

Because the scope of the independent Claim 1 is more limited when compared to the granted Claim 1, also the requirement of Article 123(3) EPC is complied with.

3. *Novelty*

Novelty follows from the fact that none of the cited documents discloses a three lip seal for vehicle wheel bearings consisting of a rotating inner race and a stationary outer race in which the two outer lips are oriented towards the outside of the bearing and the third innermost lip skims the inner bearing surface during operation to enable grease contained in the space between the bearing and the seal to flow towards the outside of the bearing.

Novelty was in fact not contested in the opposition and appeal proceedings.

4. *Inventive step*

4.1 The closest prior art is disclosed in D1 to which the preamble of the current Claim 1 relates.

Seals in accordance with this prior art have the drawback that, although having two sealing lips, they become easily worn-out and/or do not ensure a sufficient sealing in heavy operating conditions of the bearing.

4.2 The underlying problem to be solved by the present invention is to overcome the inconveniences of this prior art seal and to propose a seal performing a better sealing, having such an orientation of the relating lips to improve the sealing and to elongate the life of the seal and consequently of the bearing also during very heavy operating conditions (see the patent description page 1, last paragraph to page 2, first line).

4.3 When compared to the construction disclosed in D1 the seal in accordance with the present Claim 1 ensures better sealing and longer life essentially by improved

lubrication of the sealing lips with respect to the inner race surface. In particular the skimming function of the third lip now clarified in Claim 1 gives gradual metered flow of grease towards the sealing lips to ensure steady lubrication and perfect sealing of the sealing lips with resulting longer life of the sealing arrangement.

It thus follows from the functioning of the seal that the three lips and toroidally shaped surface of the inner race work together for ensuring optimal sealing and increased life of the seal.

- 4.4 The skimming function or other comparable means for ensuring a steady lubrication of the sealing lips is neither disclosed nor hinted to in any of the cited documents.

It is to be noted that in the decision under appeal the Opposition Division considered that D1 disclosed a skimming function of the innermost sealing lip, however this interpretation of the disclosure of D1 is not supported by the facts. Neither an explicit nor implicit disclosure is derivable from D1 that the Y-form lip seal has an other purpose than the usual contact-seal function. In this respect Board concurs with the Appellant's arguments according to which, due to the inward orientation of the innermost sealing lip, already the slightest pressure from the inside of the bearing would press together the sealing surfaces, thereby entirely preventing flow of grease to the lips to take place.

- 4.5 D4, also relied upon by the Opposition Division, discloses a seal comprising three sealing lips but also here no skimming function of any of the lips is disclosed or hinted to.

4.6 The other cited documents clearly lie further away from the claimed subject-matter and since no arguments were based on these documents in the appeal proceedings it is not considered necessary to give a detailed analysis of this further prior art.

5. Summarising, in the Board's judgment, the proposed solution to the technical problem underlying the patent in suit defined in the independent Claim 1 is inventive and therefore this Claim as well as its dependent Claim 2, relating to a particular embodiment of the invention in accordance with Rule 29(3) EPC, can form the basis for maintenance of the patent (Article 52(1) EPC).

The description is in agreement with the actual wording and scope of the Claims. Hence this document is also suitable for maintenance of the patent in amended form.

Thus taking into account the amendments made by the Appellant, the patent and the invention to which it relates meet the requirements of the EPC and the patent as amended is to be maintained in this form (Article 102(3) EPC).

Order

For these reasons it is decided that:

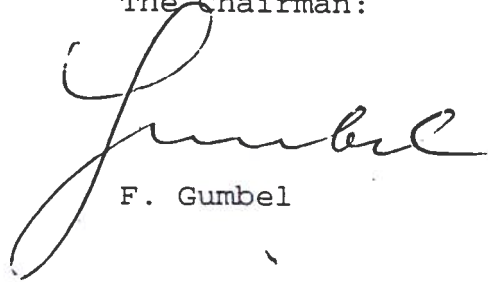
1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent with the Claims 1 and 2 and the description pages 1 to 3, filed with letter dated 27 January 1995.
3. The fee for restitutio in integrum shall be reimbursed.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel

