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Datasheet for the decision of 4 March 2009

Case Number: T 0299/07 - 3.2.05

Application Number: 98830511.6

Publication Number: 0982517

IPC: F16J 15/08

Language of the proceedings: EN

Title of invention:
Automotive steel cylinder head gasket

Patentee:
FEDERAL-MOGUL OPERATIONS ITALY S.r.l.

Opponent:
ElringKlinger AG

Headword:
-

Relevant legal provisions:
EPC Art. 56, 114

Relevant legal provisions (EPC 1973):
-

Keyword:
"Inventive step - no"

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-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0299/07 - 3.2.05

D E C I S I O N
of the Technical Board of Appeal 3.2.05
of 4 March 2009

Appellant: (Opponent)	ElringKlinger AG Max-Eyth-Str. 2 D-72581 Dettingen/Ems (DE)
Representative:	Haecker, Walter HOEGER, STELLRECHT & PARTNER Patentanwälte Uhlandstrasse 14 c D-70182 Stuttgart (DE)
Respondent: (Patent Proprietor)	FEDERAL-MOGUL OPERATIONS ITALY S.r.l. Corso Inghilterra, 2 I-12084 Mondovi (IT)
Representative:	Spandonari, Carlo Spandonari & Modiano s.r.l. corso Duca degli Abruzzi 16 I-10129 Torino (IT)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted 19 January 2007 concerning maintenance of European patent No. 0982517 in amended form, Article 102(3) EPC 1973.**

Composition of the Board:

Chairman: W. Zellhuber
Members: H. Schram
C. Rennie-Smith

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the interlocutory decision of the Opposition Division posted on 19 January 2007 maintaining European patent No. 0 982 517 in amended form.

The Opposition Division held that the grounds of opposition under Article 100(a) EPC (lack of novelty, Article 54 EPC, and lack of inventive step, Article 56 EPC) and 100(c) EPC (extension beyond the content of the application as filed, Article 123(2) EPC) did not prejudice the maintenance of the patent on the basis of claims 1 to 17 filed as main request on 23 October 2006.

II. In a communication dated 11 December 2008 annexed to the summons to oral proceedings, the Board expressed *inter alia* its provisional opinion that claim 1 as maintained seemed to meet the requirements of Articles 84 and 123(2) EPC, and that it was currently inclined to admit document D11 filed by the appellant with its statement of grounds of appeal into the appeal proceedings in exercising its discretionary power under Article 114 EPC, since this document appeared to be *prima facie* a relevant document (see points 4 and 6 of said communication).

III. Oral proceedings were held before the Board of Appeal on 4 March 2009.

The representative of the respondent (patent proprietor) had informed the Board on 12 February 2009

that neither the respondent nor its representative would attend the oral proceedings.

IV. The appellant requested that the decision under appeal be set aside and that the patent in suit be revoked.

The respondent requested that the decision under appeal be set aside and that the patent be maintained on the basis of claims 1 to 16 filed as main request on 2 February 2009. It also requested that document D11 is not admitted into the proceedings.

V. Claim 1 of the main request reads as follows:

"1. An automotive steel cylinder head gasket comprising at least a first steel plate (20; 50) having openings (30) corresponding to respective cylinder bores and a stopper extending around each of said openings, the gasket further comprising an elastic bore bead (26, 28, 60) area running around each stopper and embossed in said first steel plate or in a further plate of the gasket, characterized in that:

- each stopper comprises a shallow bore trough (34; 52) embossed in the first steel plate so as to define a short flat lip (36) between the radially inner limit of the trough and the edge of the opening, and filled with a thermosetting material (38; 56) flush with the surrounding surface of the first steel plate; and
- the gasket further comprises a peripheral shallow trough (40, 54) running along the outside periphery of the first steel plate (20; 50) and filled with a thermosetting material."

VI. The following documents were *inter alia* referred to in the appeal proceedings:

D1 JP-A 9 144887 with English translation

D3 EP-A 0 853 204

D4 US-A 4,830,698

D7 JP-A 1 141 354 with English translation

D10 EP-A 0 486 255

D11 Japanese utility model H07-41138 with English translation

D12 DE-A 36 13 990

D13 *Ullmanns Encyklopädie der technischen Chemie*, 4th Edition, Volume 18, title page and pages 245, 246 and 255.

VII. The arguments of the appellant, in writing and during the oral proceedings, can be summarized as follows:

Late-filed document D11

The main reason of the Opposition Division for maintaining the patent in suit in amended form was that the amendment "flush with the surrounding surface of the first steel plate" was considered to be non-obvious to the person skilled in the art in view of document D1. For this reason it was admissible to refer to a

further prior art document D11 which clearly showed this feature.

Inventive step

Document D11 was the closest prior art document. This document disclosed not only all the features of the preamble of claim 1 of the main request, but also the first characterizing feature of said claim. In particular, the stopper shown in Figure 7b of document D11 had a short flat lip, and the bore trough was filled with a synthetic resin material (see paragraph 16 of document D11), ie a thermosetting material, flush with the surrounding surface of the steel plate. The second characterizing feature of claim 1 of the main request, ie providing a peripheral shallow trough filled with a thermosetting material, was largely known from document D4 (see Figure 5, and column 5, line 60, to column 6, line 26) and from document D7 (see heat resistant elastic member layer 8 in Figures 1 to 3, which is made of eg epoxy resin, see page 4, line 9 from the bottom). The purpose of such a peripheral shallow trough was to equalize the surface pressure and to enhance the sealing characteristics. It was thus obvious to the person skilled in the art, starting from the gasket known from document D11, to provide a peripheral shallow trough filled with a thermosetting material and hence to arrive at the subject-matter of claim 1 of the main request.

Extension beyond the content of the application as filed, Article 123(2) EPC

In the decision under appeal the Opposition Division held that the amendment "flush with the surrounding surface of the first steel plate" was disclosed in the application as filed, Article 123(2) EPC. This has come as a surprise, since in a communication dated 12 July 2006 annexed to the summons to oral proceedings, the Opposition Division had expressed its provisional opinion that the term "filled" in claim 1 of the patent as granted could mean "completely filled" or "partially filled" (see point 8b of said communication). The Opposition Division further noted "*that an expression like "completely filled" can be found nowhere in the patent specification*". The objections under Article 123(2) EPC against the amendment held allowable by the Opposition Division were therefore formally maintained (see statement of grounds of appeal, pages 9 and 10). An additional argument under Article 123(2) EPC was that a bore trough completely filled with a thermosetting resin would no longer be complete filled after hardening, for example due to shrinking and/or evaporation, see documents D12 and D13, and point II of the letter dated 2 February 2009.

VIII. The respondent's arguments in writing can be summarized as follows:

Late-filed document D11

Document D11 was filed by the appellant for the first time in the appeal proceedings and was thus late-filed. The arguments of the appellant that document D11 was

filed in response to the main request filed on 23 October 2006 during the opposition proceedings, and could not have been filed earlier, ie during the opposition proceedings, could not be accepted. That main request was filed well in advance of the oral proceedings held before the Opposition Division on 27 November 2006, and was received by the appellant on 6 November 2006, ie three weeks before those oral proceedings. It contained a new claim 1 with only minor modifications with respect to claim 1 as granted, in particular the expression "flush with the surrounding surface of the first steel plate" had been added to make it clear that the term "filled" in the expression "filled with a thermosetting material (38; 56)" meant "completely filled" rather than "partly filled". The additional feature did not introduce any real limitation, it was merely a clarification intended to better distinguish the invention from the prior art document D1 disclosing a gasket comprising a shallow bore trough which was partly filled with a synthetic resin, see paragraph <0031> of that document. The additional feature merely confirmed a line of reasoning of the respondent since the start of the opposition proceedings and could not have come as a surprise to the appellant.

Document D11 was not more relevant than document D1. The gasket shown in Figure 7b of document D11 was quite similar to the gasket of document D1, as it comprised a single metal plate 11 having a main bead running around the bore opening 12 and also having an auxiliary embossed bead 43 containing a heat-resistant, incompressible material 44 to act as a stopper. Paragraph <0026> of document D11 contemplated both

uniform and variable thicknesses of the stopper, but the recommendation was for the latter. For all of the above reasons, document D11 should not be admitted into the appeal proceedings.

Novelty and inventive step

Claim 1 of the main request was restricted to the preferred embodiment described in paragraphs [0018] and [0021] of the patent in suit. The combination of the peripheral trough and the bore trough, both filled with hard material, had the effect of equalizing or balancing the pressure on the bore side (inside) and the peripheral side (outside) of the gasket. This combination improved the effectiveness of the gasket. Document D11 did not disclose that the stopper comprised a short flat lip. Whilst Figure 7b seemed to disclose a metal plate with a slight upturning on the left-hand border, which might be regarded as some sort of stub lip, viz. an extremely short lip, the description was completely silent about this stub lip and its possible function or use. It was only with hindsight, ie with knowledge of the invention, that the stub lip could be interpreted as a flat lip according to the invention. In the patent in suit the function of the flat lip was, when a resin was used, to prevent the resin from being burnt or degraded by the combustion taking place in the cylinder, in spite of the high operating temperatures, see paragraph [0019] of the patent in suit. Document D11 was silent about this teaching; it was nowhere disclosed that the stub lip sealed the heat-resistant transfer material from combustion gases. On the contrary, in eg Figure 4 of document D11 the stopper portion 16 was fully exposed

to combustion gases. Document D11 did not disclose a peripheral trough. Claim 1 of the main request thus fulfilled both the requirements of novelty and inventive level.

Reasons for the Decision

1. *Admissibility of document D11, and of the English translation of document D7*

1.1 Document D11 was filed by the appellant with its statement of grounds of appeal as a reaction to the interlocutory decision of the Opposition Division, which held that it was not obvious for a person skilled in the art, starting from the closest prior art document D1, to provide a gasket with the feature "[a shallow bore trough] ... filled with a thermosetting material (38; 56) flush with the surrounding surface of the first steel plate" (amendment underlined by the Board), cf. claim 1 of the (then) main request filed by the respondent on 27 October 2006.

It is established case law of the Boards of Appeal of the EPO that whether or not late filed documents are admitted into the appeal proceedings is at the discretion of the Board and depends *inter alia* on their relevance and the reasons given by the parties why these documents were not filed earlier.

In the present case, document D11 is considered *prima facie* relevant, since it discloses a gasket having a

trough completely filled with a resin material, see in particular Figure 7b.

For this reason, document D11 is duly admitted into the appeal proceedings, Article 114 EPC.

1.2 It may be noted that the appellant offered in its notice of opposition filed on 12 July 2005 to file the English translation of document D7 in Japanese (see page 10, penultimate paragraph). This offer was repeated in its letter dated 13 November 2007 (see page 16, first paragraph). The Japanese document was cited in the notice of opposition against claim 17 of the patent as granted, see page 9, last paragraph. The English translation was filed by the appellant on 25 February 2009 as a reaction to the new main request filed by the respondent on 2 February 2009.

Since document D7 in Japanese was already part of the appeal proceedings, its translation is duly admitted into the appeal proceedings, Article 114 EPC.

2. *Amendments*

Claim 1 of the main request differs from claim 1 on the basis of which the Opposition Division intended to maintain the patent substantively in that the following feature is added: *the gasket further comprising a peripheral shallow trough (40, 54) running along the outside periphery of the first steel plate (20; 50) and filled with a thermosetting material*. A basis for this feature is claim 4 of the application as filed (published version).

It follows that the above amendment is allowable under Article 123(2) and (3) EPC.

3. *Objection of lack of inventive step, Article 56 EPC*

3.1 Document D11 represents the closest prior art. This document discloses an automotive steel cylinder head gasket with all the features of the preamble of claim 1 of the main request (see eg paragraphs [0014] to [0027], and Figures 1 to 9 of document D11), and with the first characterizing feature of claim 1 of the main request with the exception that the filling material is a thermosetting material as follows:

Figures 6a to 6e of document D11 disclose different laminated metal gaskets, having two bead plates 11 and an auxiliary plate 21, and a stopper 16 (see paragraph [0024], pages 11 and 12 of document D11). This stopper can be provided, as the need may be, on the (annular extension 15 of the) upper- and/or lower surface of the bead plate(s) 11, and/or on the upper- and/or lower surface of the (annular receptacle 22 of the) auxiliary plate 21, see page 12, lines 5 to 7.

The structure of stopper 16 is shown in Figure 7 and described in the next paragraph [0025] on page 12 of document D11. In particular, the stopper 16 shown in Figure 7b consists of a single auxiliary bead 43 formed on the plate 11 leaving a short flat lip between the radially inner limit of the bead and the edge of the opening 12, which bead is completely filled with a material, eg a synthetic resin, see paragraph [0016], first three lines, of document D11).

The subject-matter of claim 1 of the main request differs from the automotive steel cylinder head gasket known from document D11 in that:

(i) the filling material of the shallow bore trough (34; 52) is a thermosetting material,

(ii) the gasket further comprises a peripheral shallow trough (40, 54) running along the outside periphery of the first steel plate (20; 50), and

(iii) the filling material of the peripheral shallow trough (40, 54) is a thermosetting material.

The requirement of both the first and third distinguishing features, namely that the filling material is a thermosetting material (also called the hard material in the patent in suit, which is preferably a high-resistance thermosetting resin, typically an epoxy resin, see paragraph [0014] of the patent in suit) is well-known in the art, see eg document D3, which is cited in paragraph [0007] of the patent in suit. Document D3 discloses a metal laminate gasket having annular bead portions 5 having recesses 51 filled with a synthetic resin layer, which is preferably formed of a thermocured epoxy resin, see column 3, lines 19 to 27. The first and third distinguishing features solve the problem of providing a suitable filling material for a bore trough of a steel gasket.

In the judgement of the Board, the second distinguishing feature, which corresponds to the first additional feature of claim 3 of the patent as granted,

is also a well-known measure. For example, document D4, which was cited by the appellant against claim 3 of the patent as granted in its notice of opposition, discloses a continuous filled embossment 112 spaced from the outer edge of the gasket, see Figures 5 and 6, and column 5, line 44, to column 6, line 26. Moreover, from document D10, which was cited by the appellant against claim 4 of the patent as granted (see its letter dated 24 October 2006), it is known to provide a peripheral metal plate 8 on the metallic plate forming the gasket for the purpose of regulating the difference in thickness between the portions of the metallic plate which are around the cylinder bore holes and portions on the radially outer side of the beads, see column 15, lines 3 to 24. Furthermore, document D7 shows in Figure 1 an elastic member layer formed around the entire circumference of the cylindrical bores and of the metal thin plate 2, respectively.

It follows from the above that the person skilled in the art, starting from the automotive steel cylinder head gasket known from document D11 and seeking to provide a suitable filling material for a bore trough of a steel gasket, and seeking to regulate the difference in thickness of a gasket, would have arrived at the subject-matter of claim 1 of the main request in an obvious manner.

Consequently, the subject-matter of claim 1 of the main request does not involve an inventive step, Article 56 EPC.

4. Under these circumstances it was not necessary to examine whether the amendment to claim 1 as granted,

viz. "flush with the surrounding surface of the steel plate", which was held to be allowable by the Opposition Division in its interlocutory decision, is admissible or not. Hence there was no need to consider the aspect of shrinking brought forward by the appellant with reference to the documents D12 and D13.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is revoked.

The Registrar: The Chairman:

D. Meyfarth W. Zellhuber