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D E C I S I O N
of 13 June 2003

Case Number: T 0764/00 - 3.2.4

Application Number: 91201511.2

Publication Number: 0464888

IPC: F16J 15/12

Language of the proceedings: EN

Title of invention:
A gasket with soft and hard seal coatings

Patentee:
ISHIKAWA GASKET CO. LTD.

Opponent:
Federal-Mogul Burscheid GmbH
REINZ-Dichtungs-GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56, 100(c) and 123

Keyword:
"Extension of subject-matter - no"
"Inventive step - yes"

Decisions cited:
-

Catchword:
-

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Case Number: T 0764/00 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 13 June 2003

Appellant: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 2 June 2000 revoking European patent No. 0464888 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: C. A. J. Andries
Members: M. G. Hatherly
M. K. S. Aúz Castro
C. D. A. Scheibling
H. Preglau

Summary of Facts and Submissions

I. European patent No. 0 464 888 was revoked for lack of inventive step by the opposition division's decision dispatched on 2 June 2000.

The appellant (proprietor) filed an appeal on 24 July 2000, paid the appeal fee simultaneously and then filed the statement of grounds of appeal on 25 September 2000.

II. The following items played a role in the appeal proceedings:

A1 Reinz drawing No. 51.08901-0059 entitled "Dichtung für MAN zum Auspuffrohr", dated 10 November 1987

A2 Reinz drawing No. 3-0304.31211-000 entitled "MAN 51.08901-0059 Zchng. vom 10.11.1987", dated 17 March 1988

A3 Robnorganic Systems Limited "Certificate of Inspection/Conformity" Serial No. 8185, dated 24 August 1988

A4 Dow Corning Europe Product Information entitled "Dow Corning® Q2-7327 Gasket Coating", Form No. 22-1154-01, dated September 1986

A5 Reinz Invoice No. 926089 to M.A.N. Nutzfahrzeuge GmbH, dated 8 December 1988

D1(F) FR-A-2 512 912

D1(E) GB-A-2 105 798

D1(G) DE-A-3 233 520

III. During oral proceedings on 13 June 2003, attended by all parties, the appellant filed a new claim 1 forming the basis of his sole request and reading:

"A cylinder head gasket (A; B; C) for sealing between a cylinder head and a cylinder block of an engine, comprising

at least one main plate (A10; B15; B17; C16) having at least one fluid opening (Hw, Ho) to be sealed therearound,

at least one first coating (All, All'; B11; C11) formed around the fluid opening on at least one of the upper and lower surfaces of the main plate, and

at least one second coating (A12; B12; C12) formed on said at least one surface of the main plate,

said gasket being characterised in the combination of the first and second coatings, wherein said first coating is a hard coating having a hardness harder than H in pencil hardness and a thickness between 2 and 100 microns, and completely surrounds only the at least one fluid opening; and

said second coating is softer than the first coating and covers the at least one first coating and a substantial area of said at least one of the upper and lower surfaces of the main plate."

IV. The appellant argued that the cylinder head gasket defined by the present claim 1 was novel and inventive over the cited prior art.

The respondents I and II (opponents I and II) argued that the feature in the present claim 1 that the "first coating ... completely surrounds only the at least one fluid opening" constituted an extension of subject-matter beyond that of the originally filed application and that the claimed gasket was obvious when starting from the public prior use gasket shown in drawing A1 or from D1(F).

V. The appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of claim 1 filed in the oral proceedings, claims 2 to 8 as granted and the adapted description also filed in the oral proceedings as well as Figures 1 to 5 as granted.

Both respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Amendments*

2.1 The present claim 1

2.1.1 Claim 1 as granted is directed in column 6, lines 25 and 26 of the patent as granted to "A gasket (A; B; C)

for sealing between two engine parts ..." whereas the present claim 1 is more specific in referring to "A cylinder head gasket (A; B; C) for sealing between a cylinder head and a cylinder block of an engine ..." which is disclosed in column 3, line 58 and column 5, lines 47 and 48 of the description (both as granted and as filed in the oral proceedings) and in corresponding passages in the original published application EP-A-0 464 888.

2.1.2 Claim 1 as granted refers in lines 28 and 31 of column 6 to an opening. The present claim 1 specifies that this opening is a fluid opening which is disclosed in column 1, line 8 of the description (both as granted and as filed in the oral proceedings) and in the corresponding passage in EP-A-0 464 888. By "fluid hole" is meant a water hole Hw or an oil hole Ho as shown on Figure 1.

2.1.3 Claim 1 as granted refers in column 6, lines 34 to 38 to "at least one second coating (A12; B12; C12) formed on at least one of the upper and lower surfaces of the main plate with the first coating for covering a substantial area of the main plate".

The present claim 1 specifies "at least one second coating (A12; B12; C12) formed on said at least one surface of the main plate".

- This "said at least one surface of the main plate" is the "at least one of the upper and lower surfaces of the main plate" specified slightly higher up in the present claim 1 when defining the first coating. Therefore in this respect the

present claim 1 is in effect the same as claim 1 as granted.

The final part of the present claim 1 states that "said second coating ... covers the at least one first coating and a substantial area of said at least one of the upper and lower surfaces of the main plate."

- Specifying that the second (softer) coating "covers the at least one first coating" is clearer and more specific than saying that the second coating is "formed ... with the first coating" and can be found in column 5, lines 8 and 9 of the description (both as granted and as filed in the oral proceedings) and in the corresponding passage in EP-A-0 464 888.

- That the second (softer) coating is on "at least one of the upper and lower surfaces of the main plate" is said in column 6, lines 34 to 36 of claim 1 as granted and specifying that it covers "a substantial area of said at least one of the upper and lower surfaces of the main plate" is clearer and more specific than the statement in the granted claim 1 that it is "for covering a substantial area of the main plate".

2.1.4 The wording "said gasket being characterised in the combination of the first and second coatings" in the present claim 1 adds nothing of substance (the two coatings are anyway specified elsewhere in both versions of claim 1, that as granted and the present one).

2.1.5 The present claim 1 adds to claim 1 as granted that "said first coating ... completely surrounds only the at least one fluid opening".

Lines 3 to 5 of column 4 of the description (both as granted and as filed in the oral proceedings) state that "Areas around the water holes Hw and oil holes Ho are sealed in accordance with the present invention." This passage is also in EP-A-0 464 888, column 3, lines 36 and 37. Thus it is clear that water holes Hw and oil holes Ho are regarded as a category of holes which can be treated in a special way, contrary to the view of appellant II. It is repeatedly stated in the description that the invention concerns sealing around a fluid hole e.g. lines 6 to 9 of column 1, lines 9 to 11 of column 2 and lines 14 and 15 of column 6 (both as granted and as filed in the oral proceedings and with corresponding passages to be found in EP-A-0 464 888).

Lines 5 to 7 of column 4 of the present description state that "However, if required, the bolt holes Hb and push rod holes Hp may be sealed as in the present invention" and lines 13 and 14 of the same column add that "it is possible to seal around the cylinder hole Hc in accordance with the present invention." These statements and the present claim 1 however have to be considered in the light of the attempt to overcome the obviousness argument based on documents A1 to A5. It will be seen in section 4.1 below that drawing A1 depicts a first epoxy resin coating formed around a group of five openings in a main plate, namely four openings for cooling water and one central opening for exhaust gases. The present claim 1 explains that the

fluid hole involved is sealed on its own or that if there are more than one fluid hole, then these are sealed individually.

2.1.6 Thus there is no objection to the present claim 1 under Article 123(2) EPC and, since the amendments restrict the scope of the claim compared to that granted, there is no objection under Article 123(3) EPC either.

2.2 The wording of the present dependent claims 2 to 8 is identical to that of the granted claims 2 to 8.

2.3 To arrive at the present description, the description as granted has merely been brought into line with the present claim 1.

2.4 The drawings are the same as those granted.

2.5 Thus the present version of the patent does not contravene Article 123 EPC.

3. *Novelty*

In the appeal proceedings the respondents have not argued that the subject-matter of the present claim 1 lacks novelty. Also the board considers that none of the prior art on file discloses all the features of the present claim 1.

Thus the board finds that the subject-matter of the present claim 1 is novel (Articles 52(1) and 54 EPC).

4. *Public prior use - the A1 gasket*

4.1 According to page 3, line 7 to page 4, line 5 of the opposition division's decision, A1 to A5 are evidence for the public prior use of a gasket for sealing an exhaust manifold having a main plate having four openings for cooling water and one central opening for exhaust gases to be sealed therearound; a first epoxy resin coating with a thickness of from 50 to 150 microns formed around the five openings on both surfaces of the main plate; and a second silicone elastomer coating formed on both surfaces of the main plate.

The opposition division considered that this alleged public prior use had been proven (see e.g. the penultimate paragraph of page 4 of the decision) and indeed revoked the patent because of it. In the appeal proceedings the appellant has not disputed the public prior use.

Also the board accepts the public prior use of a gasket with the features set out above and will refer to it as the "A1 gasket".

4.2 The present claim 1 is directed to a cylinder head gasket for sealing between a cylinder head and a cylinder block of an engine. On the other hand, as stated in the above section 4.1, the A1 gasket is a gasket for sealing an exhaust manifold.

Nevertheless the respondents consider that the A1 gasket is the closest prior art to the claimed invention. They point out that both the A1 gasket and

the claimed gasket have a gas opening and fluid (water) openings. They add that a gasket company will commonly produce both cylinder head gaskets and exhaust manifold gaskets, and conclude that the A1 gasket and the claimed gasket are generically the same.

It is nevertheless clear that the central gas opening in the A1 gasket carries exhaust gas and so is not subjected to combustion, unlike the combustion chamber opening which a cylinder head gasket has. Thus the conditions under which the A1 gasket and the claimed gasket are used are different.

4.3 For an objective assessment of inventive step, it is established EPO practice to determine the closest prior art to the claimed invention. Section I.D.3.5 of the "Case Law of the Boards of Appeal of the European Patent Office (pages 104 and 105 of the Fourth Edition in English of 2001) summarises how this has been done in the EPO, especially by this board (in various compositions).

4.4 In short, in the present case, the board considers that the person skilled in the art wishing to design a cylinder head gasket would start with one of the many existing prior art cylinder head gaskets and not with an exhaust manifold gasket, so that the A1 cannot be the closest prior art.

Although this person is completely free in choosing a starting point, he is bound thereafter by his choice. If he preferred and decided to start from an exhaust manifold gasket then could develop this gasket but, at the end of the development, the normal result would

still be an exhaust manifold gasket and not a cylinder head gasket. If his carefully considered choice of a starting point was an exhaust manifold gasket then this would define the framework for further development i.e. development within this particular type of gasket, namely an exhaust gas manifold. An argument that the person skilled in the art would change from this carefully chosen type of gasket to a different type of gasket during development is considered by the board to be the product of an *ex-post-facto* analysis.

4.5 Further the documents A1 to A5 and the gasket that embodies them give the person skilled in the art very little information for him to be able to determine whether the A1 gasket has a problem that he might be able to solve. The problem that would in practice face him would be a problem in cylinder head gaskets, not one in exhaust gaskets.

4.6 While the closest prior art in the present case is thus a cylinder head gasket, this does not mean that other gaskets would be irrelevant for the person skilled in the art. The primary source of his information (i.e. the closest prior art) is a cylinder head gasket but other gaskets could be important secondary sources of information to him when wishing to develop his initially chosen cylinder head gasket.

Thus the board, while ruling out the A1 gasket as the starting point for the present invention, will nevertheless return to it later in this decision.

5. *D1(F)*

5.1 D1(F) is in French and was cited in the opposition proceedings. In the statement of grounds of appeal, the appellant commented not on D1(F) but on its family member in English D1(E). However the content of these two family members differs e.g. Figure 3 shows three layers 14 and 16 in D1(F) but only two layers 16 in D1(E). In the oral proceedings before the board the appellant referred also to the family member in German D1(G). The board will refer only to D1(F).

5.2 The respondents essentially argue that D1(F) discloses a cylinder head gasket 10 (see Figure 1) for sealing between a cylinder head 2 and a cylinder block 3 of an engine (see Figure 2), comprising a main plate 14 having at least one fluid opening 24 (see Figures 1 and 3) to be sealed therearound. A first coating 30 (see Figure 3) is formed around the fluid opening 24 on e.g. the upper surface of the main plate 14 and a second coating 16 is formed on e.g. the upper surface of the main plate (see Figure 3). There is thus a combination of the first and second coatings. The first coating 30 can be a hard epoxy coating (see page 9, lines 15 to 21) or the first coating can be metal (see page 10, lines 13 to 16 concerning seal 102 on Figures 5 and 6). These first coatings would have a hardness harder than H in pencil hardness e.g. because an epoxy resin coating is also used in the present invention (see column 4, lines 35 and 36 of the description of the present patent). The thickness of the first coating 30 is 150 to 200 microns (see page 5, lines 22 to 27 of the citation) but it would be obvious to vary this, e.g. in view of the A1 gasket whose first

epoxy resin coating is 50 to 150 microns thick. The first coating 30 of D1(F) completely surrounds only the at least one fluid opening (see page 5, lines 13 and 14). The second coating 16 is expansible (see page 3, lines 33 and 34) and therefore must be softer than the first, metal or epoxy coating 30. The second coating 16 covers the first coating and a substantial area of the upper surface of the main plate.

Therefore the respondents maintain that the cylinder head gasket of the present claim 1 is obvious.

5.3 However the board considers that what the respondents call a "second coating 16" is not a coating at all. The board reminds the parties that although a coating is a layer, a layer need not be a coating.

Claim 1 of D1(F) specifies in lines 4 and 5 of page 12 "deux couches de portée (16) laminées l'une sur l'autre". Moreover lines 6 to 9 of page 4 state that the layers 16 are laminated mechanically or stuck with adhesive onto the surfaces 18 (of the central plate 14). Further, page 5, line 35 to page 6, line 1 states that "les couches de portée compressibles 16 sont placées de manière à recouvrir le noyau". From these three statements it is concluded that the two layers 16 exist separately before being laminated together or on the central plate 14, instead of one of them being coated on the other or on the central plate 14.

Indeed there is no indication in D1(F) of one of the layers 16 being a coating and the board sees no reason why the skilled person would be led to provide one of these layers 16 by coating.

5.4 Lines 22 to 27 of page 5 of D1(F) state that the thickness of the first coating 30 is 150 to 200 microns. There is no indication in D1(F) of reducing the thickness of this first coating 30. It is true that lines 22 to 25 of page 4 refer to varying the thickness of the layer 16 but this layer is the overlying, i.e. second layer, is not a coating, and anyway has the considerably greater thickness of 635 microns. It is also true that the first epoxy resin coating of the A1 gasket is 50 to 150 microns thick but the board sees no reason why the person skilled in the art would (as opposed to merely could) use this range instead of the range specified in D1(F).

5.5 The respondents argue that the first coating in D1(F) can be metal or epoxy both of which would have a hardness harder than H in pencil hardness.

However these materials are only two of many materials disclosed in D1(F) for the sealing pattern e.g. incompressible or deformable, elastomer (page 2, lines 9 and 10), silicone, two component liquid silicone (page 5, lines 22 to 29), other rubbers (page 7, line 15), epoxies such as flexible and rubber modified epoxies or combinations thereof (page 9, lines 19 to 21), metal, ceramic or preformed plastic (page 10, line 16).

D1(F) also discloses many other possibilities for each of the other components of the gasket e.g. the sealing pattern can be silk-screened (page 5, lines 22 to 25) or stuck (page 10, line 19) on the adjoining layer. It is not clear that the person skilled in the art would (as opposed to merely could) choose from the numerous theoretically possible combinations specifically a combination that would come close to the presently claimed gasket.

Moreover the example of metal cited by the respondents is disclosed in line 16 of page 10 of D1(F) for the seal 102 on Figures 5 and 6 which would seem to be pre-formed and stuck to the underlying layer (see line 19 of page 10) and therefore to be a layer whereas the present claim 1 specifies a "first coating".

The board does not doubt that some epoxies have a hardness harder than H in pencil hardness but does not see this as proven for the example given in page 9, lines 15 to 21 of D1(F) of epoxies such as flexible and rubber modified epoxies or combinations thereof.

5.6 It now needs to be considered whether the person skilled in the art would modify the D1(F) gasket using some information from the A1 gasket.

The A1 gasket includes a DS 4000 epoxy resin coating but neither the drawing A1 nor any of A2 to A5 gives any information as to the hardness of this coating. Although there was some dispute in the proceedings before the opposition division as to the reliability of the pencil hardness test, it is plainly a recognised test for coatings and the respondents could have

submitted test results for the DS 4000 coating instead of relying on the argument that the A1 coating hardness must be as specified in the present claim 1 since an epoxy resin coating is also used in the present invention (see column 4, lines 35 and 36 of the description of the present patent). In view of the variety of possible epoxies, this reliance is insufficient.

Although it would be apparent to the person skilled in the art that drawing A1 shows a softer coating having a thickness of 10 to 40 microns over the epoxy resin coating, the board cannot see why the skilled person would be led to use this thin, softer coating to replace the non-coated layer 16 of D1(F) which is considerably thicker at 635 microns, see page 4, lines 22 and 23 of D1(F).

The board sees no reason why the person skilled in the art would pick from the A1 gasket merely those features that would move the D1(F) gasket closer to the gasket specified in the present claim 1. The board considers that the argument that he would make these choices is based on an impermissible *ex-post-facto* analysis.

5.7 Accordingly the board considers that the person skilled in the art who starts with the teachings of D1(F) would not be able to proceed to the subject-matter defined by the present claim 1 without exercising inventive skill.

6. At the start of the oral proceedings the chairman of the board stated that the proceedings before the opposition division had concentrated on the public prior use of the A1 gasket and that, if the board were

to come to the conclusion that on the contrary the A1 gasket did not render the claimed gasket obvious, then the board would consider remitting the case to the opposition division for examination of the other documents and arguments filed during the proceedings before the opposition division. The representative for appellant I stated that he did not wish the case to be remitted and the other parties did not disagree with him. There was no request from any party for remittal of the case to the opposition division for further consideration.

During the oral proceedings before the board, the A1 gasket and D1(F) were fully discussed and it must have been apparent to the respondents that the board had doubts as to whether these citations were sufficient to conclude that the claimed subject-matter was obvious e.g. doubts as to the suitability of the A1 gasket as a starting point and doubts as to whether the layer 16 of D1(F) could be termed a coating. However at no point during the oral proceedings did the respondents refer to any of the other documents on file. The board therefore concluded that the A1 gasket and D1(F) were the best prior art that the respondents had to offer. Therefore the board did not remit the case to the opposition division for consideration of the other documents but itself examined the case on the basis of the facts, evidence and arguments brought forward by the parties during the appeal proceedings.

7. The board thus finds that the subject-matter of the present claim 1 is not obvious (Articles 52(1) and 56 EPC).

8. Thus claim 1 of the sole request is patentable as are claims 2 to 8 which are dependent thereon. Accordingly the patent can be maintained in amended form as set out below.

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 in amended form in the following version:

claims: claim 1 as filed in the oral proceedings,
claims 2 to 8 as granted,

description: filed in the oral proceedings,

Figures: 1 to 5 as granted.

The Registrar: The Chairman:

G. Magouliotis C. Andries