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D E C I S I O N
of 19 October 2001

Case Number: T 0299/99 - 3.2.4

Application Number: 91311204.1

Publication Number: 0544951

IPC: F16J 15/08

Language of the proceedings: EN

Title of invention:

Gasket

Patentee:

NIPPON GASKET CO., LTD., et al

Opponent:

ElringKlinger AG
JAPAN METAL GASKET CO., LTD.
REINZ-Dichtungs-GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 123(2), 56
EPC R. 71(2)

Keyword:

"Extension of subject-matter - features of first embodiment
not disclosed for second embodiment beyond reasonable doubt"
"Inventive step - yes"

Decisions cited:

T 0017/86 - T 0383/88

Catchword:

-



Case Number: T 0299/99 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal 3.2.4
of 19 October 2001

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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 25 January
1999 concerning maintenance of European patent
No. 0 544 951 in amended form.

Composition of the Board:

Chairman: C. A. J. Andries

Members: M. G. Hatherly

H. Preglau

Summary of Facts and Submissions

- I. The opposition division's interlocutory decision that the amended European patent No. 0 544 951 met the requirements of the EPC was posted on 25 January 1999.

On 23 March 1999 the appellant (opponent I) filed an appeal and paid the appeal fee, filing the statement of grounds on 22 May 1999.

- II. The main request of the respondent (patentee) in the appeal proceedings is for dismissal of the appeal and therefore corresponds to the amended version of the patent held by the opposition division to meet the requirements of the EPC. This version includes the following claims:

"1. A metallic gasket (G) having at least one hole (A) therethrough, the gasket comprising:

two bead layers (3, 4) made of elastic metallic material and having around each hole (A) a pair of superimposed depressions (1) each in a respective one of the bead layers (3, 4); and

first and second intermediate layers (6, 8) between the bead layers (3, 4);

the first intermediate layer (6) having around each hole (A) a raised strip (7) defined by a step (9) in the surface of the first intermediate layer (6) remote from the second intermediate layer (8) and by a step in the surface of the first intermediate layer (6) which faces the second intermediate layer (8), the two steps (9) being in the same direction and the depth of the step which is adjacent to the second intermediate layer (8) being less than the thickness of the second intermediate layer (8);

the second intermediate layer (8) having around each hole (A) a strip (11) folded back to form a spacer layer (12); and

the two depressions (1) around each hole (A) being located radially outwards of the respective two strips (7, 11) of the intermediate layers (6, 8);

characterized in that the raised strip (7) is on the surface of the first intermediate layer (6) remote from the second intermediate layer (8);

the folded-back strip (11) is folded back between the rest of the second intermediate layer (8) and the first intermediate layer (6); and

the first intermediate layer (6) has a hardness value HV of 90 to 120 and the second intermediate layer (8) has a hardness value HV of 130 to 200.

2. A gasket according to claim 1, further comprising a deformable layer (13) located between each strip (11) of the second intermediate layer (8) and the rest of the second intermediate layer (8)."

Claim 1 of the first auxiliary request adds to claim 1 of the main request that the gasket is for a diesel engine and has a plurality of holes. Claim 2 of the first auxiliary request is the same as that of the main request.

There is only one claim in the second auxiliary request and this is the same as claim 1 of the main request.

The third auxiliary request has only one claim, namely claim 1 of the first auxiliary request.

III. The following documents played a role in the appeal proceedings:

D1: EP-A-0 306 766

D6: JP-A-63-293 363 (cited in column 1 of granted patent)

- EP-A-0 230 804

- Drawing K15-241003-03, dated 2 May 1989, said to be of Nihon Metal Gasket K.K.

- Affidavit of Kosaku Ueta of Nihon Metal Gasket K.K., 31 August 2001

- Decision X ZR 87/95 of Deutsche Bundesgerichtshof of 9 December 1997, paragraph bridging pages 11 and 12

IV. All parties were summoned to oral proceedings. Opponent II (party as of right) did not reply to the summons whereas opponent III (party as of right) stated by letter of 24 July 2001 that it did not intend to attend the oral proceedings. The oral proceedings took place on 19 October 2001 with the appellant and the respondent but, in accordance with Rule 71(2) EPC, without opponents II and III.

V. During the appeal proceedings the appellant objected under Article 123(2) EPC that the hardness ranges in claim 1 of the main and first auxiliary requests were disclosed in the description only for particular sheet thicknesses and only in connection with the first embodiment. Moreover the appellant argued that the claimed gasket was an obvious modification of gaskets disclosed in D1. The appellant filed evidence to prove that the claimed hardness ranges were common knowledge

in the art and maintained that there was no synergy between the gasket's configuration and its hardness ranges.

During the appeal proceedings the respondent argued that the claimed hardness ranges had been disclosed independently of particular sheet thicknesses and implicitly also in connection with the second embodiment. The respondent maintained that the claimed gasket was not an obvious modification of the prior art and objected to the late filing of evidence on the hardness ranges and argued that this evidence was inconclusive.

The parties as of right put forward no arguments during the appeal proceedings.

VI. The appellant requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patentee) requested that the appeal be dismissed and that the patent be maintained according to the interlocutory decision of the opposition division (main request) or that the decision under appeal be set aside and the patent maintained on the basis of claims 1 and 2 filed with the letter of 9 February 2000 (first auxiliary request) or on the basis of solely claim 1 of either the main request or the first auxiliary request (second and third auxiliary requests brought forward during the oral proceedings).

The parties as of right made no requests during the appeal proceedings.

Reasons for the decision

1. The appeal is admissible.
2. *Amendments - the main request*
 - 2.1 Claim 1 of the main request consists of all the subject-matter of the granted claims 1, 2 and 5 (original claims 1, 2 and 5) and hardness ranges taken from column 2, lines 53 to 56 of the granted description (column 2, lines 50 to 53 of the published application).
 - 2.2 Claim 1 of the main request is thus more restricted in scope than claim 1 as granted so Article 123(3) EPC is not contravened.
 - 2.3 Claim 2 of the main request corresponds to the granted claim 3 (original claim 3). It is dependent on claim 1 of the main request and concerns the second embodiment shown in the granted Figure 3.
 - 2.4 The appellant objected under Article 123(2) EPC that the hardness ranges in claim 1 of the main request were disclosed in the description only for particular sheet thicknesses and only in connection with the first embodiment.
 - 2.5 From now on, the board will normally cite the column and line numbers of the description as granted. Identical wording is to be found in the description as originally filed.
 - 2.6 Whether the hardness ranges can be specified without the thicknesses

2.6.1 Column 2, lines 53 to 55 of the description as granted states that

"In the first embodiment, a thin second intermediate layer 8 has an HV of 130 to 200 and a thickness of 0.6 mm."

The hardness range and the thickness of the second intermediate layer are specified in the same sentence but the board considers that drafter might just as easily have written that

- "The second intermediate layer 8 has an HV of 130 to 200. The second intermediate layer 8 has a thickness of 0.6 mm."

and that hardness and thickness were put together in one sentence for linguistic elegance not for technical reasons.

2.6.2 This is confirmed by the fact that the hardness of the second intermediate layer (relative to the first intermediate layer) was specified in the granted claim 4 (original claim 4) with no mention of thicknesses.

2.6.3 In section 6.3 below the board finds that the combination of features in claim 1 is sufficient to solve the problem arising from the prior art. Accordingly, in line with T 17/86 (not published in OJ EPO), the hardness range of the second intermediate layer can be specified in claim 1 of the main request without also specifying the thickness of this layer.

2.6.4 Column 2, lines 55 and 56 of the description as granted states that

"The first intermediate layer 6 has an HV of 90 to 120 and a thickness of 0.6 mm."

The reasoning set out in section 2.6.1 to 2.6.3 above applies mutatis mutandis also for the first intermediate layer.

2.6.5 Thus the hardness range of each of the first and second intermediate layers can be specified in claim 1 of the main request without also specifying the thickness of each of these layers.

2.7 Whether the hardness ranges were disclosed only in connection with the first embodiment

2.7.1 Lines 45 to 52 of column 2 of the description as granted describe both the first and second embodiments. Column 2, line 53 to column 3, line 14 describing the first embodiment is followed by column 3, lines 15 to 24 describing the second embodiment.

2.7.2 The respondent argued that the drafter of a patent application would describe the first embodiment in full detail but for the subsequent embodiments would only describe the features which differed from the preceding embodiment. Thus, in the respondent's view, the description of the second embodiment explained the different thickness of the second intermediate layer 8 but, since it did not specify the latter's hardness range, this would be taken by the skilled person to be the same as for the first embodiment. Similarly since the hardness range was not specified for the first

intermediate layer 6 of the second embodiment, it would be the same as that given for the first embodiment.

- 2.7.3 The board sees some logic in the respondent's reasoning but this reasoning is not wholly supported by the cited passages in the description. Thus the step height for the second embodiment is given in column 3, line 22 of the description as granted even though the same height was already given for the first embodiment in column 2, line 57. Moreover, lines 22 to 24 of column 3 state that the "layers 6, 8 are assembled in the same way as for the first embodiment" whereas this statement would be unnecessary if the respondent's view were correct.

Thus the board cannot unreservedly accept that the hardness ranges of the first and second embodiments are the same.

Moreover, the behaviour of the assembly of the second intermediate layer 8 and the additional soft layer 13 of the second embodiment would be expected to be different to that of the second intermediate layer 8 of the first embodiment. Accordingly the board is not convinced that the skilled person would assume that the hardness range of the second intermediate layer 8 would be the same in the two embodiments.

- 2.7.4 The board's doubts on the allowability of applying to the second embodiment the hardness ranges explicitly given for the first embodiment cannot be resolved in the respondent's favour. As explained in section 2.2.2 of T 383/88 (not published in the OJ EPO), the standard to be applied when deciding the allowability of amendments under Article 123(2) EPC is not the standard of "balance of probability" but the more rigorous

standard of "beyond reasonable doubt".

- 2.7.5 Claim 2 of the main request includes the hardness ranges of claim 1 of the main request but is directed to the second embodiment for which said hardness ranges were not originally disclosed. Therefore claim 2 of the main request is unallowable under Article 123(2) EPC.

Moreover the second embodiment cannot be allowed to be present in the description and drawings since it would wrongly imply that this embodiment has the hardness ranges specified in claim 1 of the main request. The deletion of the second embodiment is necessitated by the lack of disclosure in the original application and has nothing to do with the scope of the independent claim.

- 2.8 Thus the main request is unallowable.

3. *The first auxiliary request*

The reasoning in section 2.7 above applies equally to the first auxiliary request whose claim 2, description and drawings are the same as those of the main request.

Therefore also the first auxiliary request is unallowable.

4. *Amendments - second auxiliary request*

- 4.1 There is no claim 2 in the second auxiliary request and the second embodiment has been excised from the description and drawings. The sole claim of this request is the same as claim 1 of the main request.

- 4.2 Sections 2.1, 2.2 and 2.6.5 above also apply to claim 1 of the second auxiliary request. Moreover it is not disputed that the hardness ranges in claim 1 of the second auxiliary request were disclosed in connection with the (first) embodiment.
- 4.3 The description and drawings for the second auxiliary request differ from those as granted merely by acknowledgement of the prior art, adaptation to the claim and by excision of the second embodiment.
- 4.4 Accordingly the board concludes that the patent version according to the second auxiliary request does not contravene Article 123 EPC.

5. *Novelty - second auxiliary request*

The board is satisfied that none of prior art documents on file discloses a metallic gasket with all the features of the sole claim of the second auxiliary request. This was not disputed by the parties in the appeal proceedings.

The subject-matter of the sole claim of the second auxiliary request is thus novel within the meaning of Article 54 EPC.

6. *Closest prior art, problem and solution - second auxiliary request*

- 6.1 The parties and the board agree that the gasket shown in Figure 2 of D1 is the closest to the present invention and has the features of the pre-characterising portion of claim 1 of the second auxiliary request.

6.2 The claimed gasket differs from that of Figure 2 of D1 in two ways, firstly in configuration (see the first four lines of the characterising portion of the claim), i.e.

- a. that the raised strip (7) is on the surface of the first intermediate layer (6) remote from the second intermediate layer (8); and
- b. that the folded-back strip (11) is folded back between the rest of the second intermediate layer (8) and the first intermediate layer (6);

and secondly by the hardness ranges (see the last two lines of the claim).

6.3 The board considers that the problem facing the skilled person when starting from the gasket shown in Figure 2 of D1 is to improve its sealing by balancing the stresses in the intermediate layers to reduce cracking or breaking around the hole portions and that this problem is solved by the features of claim 1 of the second auxiliary request (see also column 2, lines 13 to 16 of the granted description).

7. *Inventive step - second auxiliary request*

7.1 Referring to the configuration of the gasket as defined by the claim of the second auxiliary request, as stated in section 6.2 above Figure 2 of D1 does not disclose features a and b.

7.2 The board cannot accept the appellant's argument in section II of the statement of grounds that Figure 4 of D1 discloses feature a. It is clear from the claim that

the first intermediate layer is the intermediate layer without the folded back strip, thus the first intermediate layer on Figure 4 is numbered 42 and has no raised strip at all.

- 7.3 The appellant argued that Figure 4 and 5 of D1 disclosed part of feature b and it was simply that the intermediate plate 42 in Figure 4 and the second intermediate plate 54 in Figure 5 did not reach over the folded back strip on the compensation plate 12, this being an obvious modification.

The board notes that the non-overlapping of the intermediate plate 42 or 54 on the folded back strip on the compensation plate 12 in Figure 4 or 5 was a deliberate choice, see D1, column 9, lines 35 to 43 and the gap C1 on Figure 4 and column 10, lines 22 to 32 and the gap C2 on Figure 5.

If this were to be changed then there would need to be a further modification, namely the intermediate plate 42 or 54 would need to be stepped, and the effect of the symmetry of $h3 = h4$ (see D1, column 9, lines 52 to 55) or $h5 = h6$ (see column 10, lines 46 to 49) would be lost. The board considers that the intermediate plate 42 or 54 in D1 stops short of the compensation plate 12 precisely in order that the former does not need to be stepped.

If the second intermediate plate 42 or 54 were made to overlap the compensation plate 12 then, when the gasket is compressed, the peripheral edge portion 4e of the first base plate 4 would contact the inner edges of second intermediate plate 42 or 54 and not the inner edges of the compensation plate 12. The appellant

argued that extending the second intermediate plate 42 or 54 would be obvious but the board notes firstly that this change would alter the whole way in which the gasket functioned and so would not be performed as a matter of course by the skilled person, and secondly that, in order to be guided in an obvious way to a modification, there should be an indication in the available prior art to solve the above mentioned problem with respect to the intermediate layers. No such indication is to be found in the description of the embodiments of Figures 2, 4 and 5 of D1. To suppose that the skilled person would act otherwise would be the result of an ex-post-facto analysis.

It will be seen that in D1 the intermediate plate is stepped only if it is sandwiched by the compensation plate 12 (see Figure 2, 3 and 5).

Moreover by arguing that it would be obvious to modify the gasket of Figure 4 of D1, the appellant has changed the starting point from the gasket of Figure 2 of D1 which the parties and the board considered to be the closest state of the art.

- 7.4 The appellant added that it was known e.g. from Figure 2 of D1, for the unfolded (i.e. first) intermediate layer 10 to extend over the whole area of the folded (i.e. second) intermediate layer 12.

However this is not wholly correct since in Figure 2 the lateral extent of the second intermediate layer 12 is more than that of the first intermediate layer 10 and must be so because layer 12 is folded around layer 10.

7.5 The appellant maintained that whether one constructed the intermediate element (which consists of the two intermediate layers) according to Figure 2 of D1 or Figure 4 of D1 or Figure 2 of the present patent was a design question which depended on how wide the gap was that was to be filled in the engine and so how thick the intermediate element was to be and how thick the two intermediate layers were to be.

The board considers however that the skilled person with D1 in front of him already has a number of gaskets to fill various engine gaps and, if he wanted to fill other gaps, then he would adapt these known gaskets by changing the number of and thicknesses of the intermediate layers (see e.g. D1, column 9, lines 12 to 18). The board sees nothing in D1 or in the skilled person's technical knowledge that would lead him to the gasket according to the present invention.

7.6 The appellant pointed out that a relatively thick layer was not easily folded on itself because the bend radius was too small and there was a risk of cracks. Therefore the appellant maintained that the skilled person would tend to fold a thicker layer around the unfolded layer but to fold a thinner intermediate layer on itself (which the skilled person would do because then only the individual layers were to be put one on the other).

This view is however not borne out by D1 where the compensation plate 12, 112, whether folded around the other intermediate layer 10, 52, 110 (Figs. 2, 3, 5 and 8 to 10) or folded on itself (Figs. 4 and 6), is drawn with the same thickness. While the Figures are of course not to scale, they imply that the drafter of D1 paid no attention to the thickness of the compensation

plate 12 when deciding how to bend it.

7.7 An important consequence of the construction of the present invention is that, when the gasket is compressed, the inner edge of one of the bead layers 3 or 4 contacts the first intermediate layer 6 and the inner edge of the other bead layer contacts the second intermediate layer 8 (the compensation plate). On the other hand, when the gaskets of D1 are compressed, the inner edges of **both** bead layers contact the compensation plate (see Figs. 3 and 9 of D1).

7.8 Thus the board finds that the **configuration** of the gasket defined by the claim of the second auxiliary request is not obvious to the skilled person reading D1 (Articles 52(1) and 56 EPC).

7.9 In addition to the configuration, the claim also specifies hardness ranges for the intermediate layers (in the last two lines of the claim).

The appellant argued that there was no synergy between this configuration and these hardness ranges. Moreover the appellant cited D1, D6, decision X ZR 87/95 of Deutsche Bundesgerichtshof of 9 December 1997, drawing K15-241003-03 and an affidavit of Kosaku Ueta (and also offered him as a witness) to show common knowledge in the art of the specified hardness ranges and to back up the argument that the skilled person without needing to be inventive would be in a position to choose hardness values corresponding to those in the claim.

However since the configuration taken on its own would not be obvious to the skilled person, the board does not need to examine what the hardness ranges add to the

rest of the claim.

8. The patent may therefore be maintained amended, based on claim 1 of the second auxiliary request, the amended description and the amended drawings.
9. It is therefore unnecessary to consider the appellant's third auxiliary request.

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 the following version:
 - claim 1 of the second auxiliary request,
 - description pages 1, 2 and 2a as well as column 2, line 45 to column 3, line 58, and
 - Figures 1 and 2,all filed during the oral proceedings.

The Registrar:

The Chairman:

G. Magouliotis

C. Andries