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D E C I S I O N
of 6 October 2005

Case Number: T 0132/01 - 3.2.04

Application Number: 93302414.3

Publication Number: 0579353

IPC: F16J 15/08

Language of the proceedings: EN

Title of invention:

Metal gasket

Patentee:

NIPPON GASKET COMPANY Ltd.

Opponent:

REINZ-Dichtungs-GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 114(2)

Keyword:

"Allegation of public prior use filed late - not admitted into the proceedings"

"Novelty and inventive step - yes"

Decisions cited:

-

Catchword:

-



Case Number: T 0132/01 - 3.2.04

D E C I S I O N
of the Technical Board of Appeal 3.2.04
of 6 October 2005

Appellant: REINZ-Dichtungs-GmbH
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Representative: Reitzle, Helmut
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Respondent: NIPPON GASKET COMPANY Ltd.
(Proprietor of the patent) 248 Kanou Higashiosaka-shi
Osaka-fu (JP)

Representative: Jenkins, Peter David
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 8 January 2001
rejecting the opposition filed against European
patent No. 0579353 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: M. Ceyte
Members: M. Hatherly
C. Heath

Summary of Facts and Submissions

I. The opposition division's decision to reject the opposition against European patent No. 0 579 353 was posted on 8 January 2001.

On 29 January 2001 the appellant (opponent) filed an appeal and simultaneously paid the appeal fee, filing the statement of grounds on 8 May 2001.

II. Claim 1 of the main request, i.e. as granted, reads:

"A metal gasket including:

an elastic metal plate (1);
cylinder bore holes (2) so bored in said elastic metal plate (1) as to be sequentially adjacent to one another;
ring-like beads (3) for sealing which are formed around said cylinder bore holes (2) in such a way that one of the surfaces thereof is convex and the other of the surfaces thereof is concave;
each of said beads (3) comprising an independent bead (9) formed in a region other than a region between adjacent cylinder bore holes (2),
junction beads (4) formed in regions where the independent beads (9) of adjacent cylinder bore holes (2) join with one another, and a common bead (5) connecting said junction beads (4) and formed in the region between adjacent cylinder bore holes (2);
a bead width of each independent bead (9) being determined by a distance between an inner border (8) and an outer border (11) extending about said cylinder bore holes (2), and being of

substantially the same width around said cylinder bore holes (2);
a bead width of each common bead (5) being determined by a distance between the inner borders (8) of adjacent cylinder bore holes (2) and being of straight shape;
each junction bead (4) being formed by a junction portion (17) encompassed by an arcuate outer border (15) which connects the outer borders (11) of adjacent independent beads (9) with a smooth curve, characterized in that said junction portion (17) is further encompassed by arcuate inner borders (16) which connect the inner borders (8) of adjacent independent beads (9) to the inner borders (8) of said common bead (5) with a smooth curve having a radius of curvature smaller than that of said cylinder bore holes (2)."

Claim 1 of the first auxiliary request adds the wording "there being a single ring-like bead (3) formed around each cylinder bore hole (2)" to claim 1 as granted.

Claim 1 of the second auxiliary request is a combination of claims 1 and 4 as granted.

III. The following items were referred to in the appeal proceedings:

A2: Copy of engineering drawing, Part No. 1374869,
Name Gasket - Cylinder Head, Buick Motor Division

A5: Letter from Mr Jerry Belter to the opponent dated
28 May 1998

- A7: Affidavit from Mr Jerome Belter dated 7 February 2000
- A8: Physical sample of a cylinder head gasket 3364BSC2
- A9: Affidavit from Mr Jerome Belter dated 19 July 2005
- B1: Affidavit by Mr Paul Rakauskas, dated 24 March 2004
- B2: Copy of engineering drawing, Part No. 1350280, Name Gasket - Cylinder Head, Buick Motor Division
- B3: Quotation and selling record
- B4: Affidavit by Mr Jerome Belter, dated 8 June 2004
- B5: Copy of engineering drawing, Part No. 1350280, Name Gasket - Cylinder Head, Buick Motor Division - apart from the size, the same as B2
- B6: same as B3
- B7: typed version of B6
- D1: DE-A-3 943 177
- D2: JP-UM-B-8678/1989
- D4: US-A-4 815 750
- G1: Gutachten - Patentbewertung einer Zylinderkopfdichtlippenform aus umformtechnischer

Sicht, Fraunhofer Institut Werkzeugmaschinen und Umformtechnik, 4 May 2001

IV. The parties were summoned to oral proceedings which took place on 9 September 2005 with the appellant and the respondent (proprietor) present.

V. In the appeal proceedings the appellant argued that the patent should be revoked for lack of novelty or lack of inventive step over the public prior use based on documents B1 to B7, over the publicly prior used gasket A8, and over D1, D2 and D4.

The respondent maintained that the allegation of public prior use based on documents B1 to B7 had been filed too late and was not relevant. He argued that the claimed subject-matter was clearly defined and novel and inventive over the entire prior art.

VI. The appellant requested that the decision under appeal be set aside and the patent revoked. Auxiliarily he requested that the auxiliary requests of the respondent be rejected as late filed.

The respondent requested that the appeal be dismissed, thus leaving the patent maintained as granted. Auxiliarily he requested that the decision under appeal be set aside and the patent maintained on the basis of auxiliary request 1 or 2 filed with the letter of 1 August 2005.

VII. After adjourning the oral proceedings and deliberation by the board the chairman gave the following decision:

"The decision will be issued in writing.
The debate is closed."

Reasons for the Decision

1. The appeal is admissible.
2. *Interpretation of claim 1 as granted*
 - 2.1 The board divides claim 1 as granted (i.e. claim 1 of the main request) into the following sections:

A metal gasket including:

- a an elastic metal plate (1);
- b cylinder bore holes (2) so bored in said elastic metal plate (1) as to be sequentially adjacent to one another;
- c ring-like beads (3) for sealing which are formed around said cylinder bore holes (2) in such a way that one of the surfaces thereof is convex and the other of the surfaces thereof is concave;
- c1a each of said beads (3) comprising
- c1b an independent bead (9) formed in a region other than a region between adjacent cylinder bore holes (2),
- c2 junction beads (4) formed in regions where the independent beads (9) of adjacent cylinder bore holes (2) join with one another,
- c3 and a common bead (5) connecting said junction beads (4) and formed in the region between adjacent cylinder bore holes (2);
- c4 a bead width of each independent bead (9) being determined by a distance between an inner border (8) and an outer border (11) extending about said cylinder bore holes (2), and being of substantially the same width around said cylinder bore holes (2);

- c5 a bead width of each common bead (5) being determined by a distance between the inner borders (8) of adjacent cylinder bore holes (2) and being of straight shape;
- c6 each junction bead (4) being formed by a junction portion (17) encompassed by an arcuate outer border (15) which connects the outer borders (11) of adjacent independent beads (9) with a smooth curve, characterized in that
- c7 said junction portion (17) is further encompassed by arcuate inner borders (16) which connect the inner borders (8) of adjacent independent beads (9) to the inner borders (8) of said common bead (5) with a smooth curve having a radius of curvature smaller than that of said cylinder bore holes (2).

2.2 According to section c of the above division the claimed gasket includes ring-like beads formed around the cylinder bore holes. These ring-like beads are not merely arcs, on the contrary they extend around the entire periphery of the respective cylinder bore hole because they are **ring**-like (see c) and because each comprises an independent bead except between adjacent cylinder bore holes (see c1b), junction beads (see c2) and a common bead between adjacent cylinder bore holes (see c3).

2.3 The claim opens with the words "A metal gasket **including**". Thus what follows need not be a complete list of the gasket's features. However according to c1a to c3 **each** of **said** beads (i.e. the ring-like beads formed around the cylinder bore holes) comprises an independent bead, junction beads and a common bead. The gasket may include other things than those listed in the claim (e.g. coolant bore holes and even other beads around these coolant bore holes) but **each** (i.e. all) of

said beads (i.e. the ring-like beads formed around the cylinder bore holes) must comprise the independent bead, the junction beads and the common bead. There cannot be any ring-like beads formed around the cylinder bore holes which do not join each other between adjacent cylinder bore holes. Also the feature c5 that the width of each common bead is determined by a distance between the inner borders of adjacent cylinder bore holes points to there being a single bead between the cylinder bore holes because otherwise the width of the common bead would be determined at least partially by the extra bead or beads.

Linguistically the above interpretation is the only correct interpretation. Moreover it is in line with the patent specification which describes and shows between adjacent cylinder bore holes only the common bead and which does not describe or show or even hint at the possibility of more than the common bead between adjacent cylinder bore holes (which in any case would be totally contrary to the teaching of the patent regarding how face-to-face pressure is optimised). In the oral proceedings the respondent confirmed the above interpretation and that he wished to be bound by it.

- 2.4 It is clear from c1b, c2 and c3 of the division in section 2.1 above that the junction beads 4 are formed in regions where the independent beads 9 of adjacent cylinder bore holes 2 join with one another and that each junction bead 4 is connected at one end to the independent beads 9 and at the other end to the common bead 5.

It is further clear from c6 and c7 that each junction bead 4 or junction portion 17 is encompassed

- by an outer border 15 (which connects the outer borders 11 of adjacent independent beads 9) and
- by inner borders 16 (which connect the inner borders 8 of adjacent independent beads 9 to the inner borders 8 of the common bead 5).

These outer and inner borders can be seen on Figs. 2, 4, 6 and 8 of the patent specification.

Thus the boundaries (the ends and the outer and inner borders) of the junction bead are defined by the claim.

2.5 According to c6 of the division of claim 1 as granted, the outer border 15 (connecting the outer borders 11 of adjacent independent beads 9) is arcuate and connects then with a smooth curve. This can be seen on Figs. 2, 4, 5, 6 and 8 of the patent specification.

2.6 According to c7 the inner border 16 is arcuate and connects the inner border of the independent bead 9 to the inner border 8 of the independent bead 9 with a smooth curve. The smoothly curved arcuate inner border 16 can be seen on Figs. 2, 4, 5, 6 and 8 of the patent specification, noting that it is not a simple curve but a double curve starting off (in the direction from independent bead 9 to common bead 5 and looked at from the cylinder bore hole 2) with a convex portion which then turns over to become a concave portion.

2.7 The section c7 refers to the smooth curve of the arcuate inner border 16 as "having a radius of curvature smaller than that of said cylinder bore holes (2)." However the radius is not constant along the arcuate inner border and indeed to state that the radius is smaller than that of the cylinder bore holes only makes sense where the inner border is concave (looked at from the cylinder bore hole). While one can indeed refer to the smooth curve of the arcuate inner border 16 as "having a radius of curvature smaller than that of said cylinder bore holes (2)", this is only in the sense that "having" means "including". Nevertheless claim 1 is the claim as granted and undoubtedly is intended to cover the shapes of the arcuate inner borders shown in Figs. 2, 4, 5, 6 and 8 and described in the corresponding passages in the description of the patent specification. The feature in the claim must be interpreted in the light of the description, as provided for by Article 69(1) EPC.

3. *Admissibility of the alleged public prior use B1 to B7*

3.1 It was not until 5½ years after filing the notice of opposition and more than 2½ years after filing the statement of grounds of appeal, that, in the letter of 21 January 2004, the appellant asked for time to file a public prior used cylinder head gasket (not just a drawing but a gasket, see page 1 of said letter: "Die noch vorzulegende Zylinderkopfdichtung...") obtained by American Motors in 1981 to 1985, used in over 200 000 of their vehicles and which completely destroyed the novelty of claim 1.

With the letter of 23 June 2004 the appellant filed the documents B1 to B7 as evidence for an alleged delivery of 514 cylinder head gaskets (see the last sentence on page 8 of the letter of 23 June 2004) made by the US division of the appellant to General Motors Buick Division in 1962 and 1963.

Thus the appellant filed evidence of an alleged public prior use which differed markedly from what he had promised to file. The time of the alleged use differed by 20 years, the user differed as did greatly the number of gaskets. Moreover the appellant did not file the promised actual gasket but only non-public drawings.

Further, given that the gasket referred to in documents B1 to B7 was manufactured by the US division of the appellant, the appellant should have had knowledge of it even before the expiry of the opposition period.

- 3.2 Accordingly the allegation of a public prior use based on documents B1 to B7 was filed extremely late. Moreover the evidence itself is weak. The drawing B5 was never publicly available and gaskets allegedly made to this drawing and allegedly available to the public are no longer available.
- 3.3 The appellant argued that the alleged prior use based on documents B1 to B7 was extremely relevant because gaskets built to drawing B5 destroyed the novelty of claim 1.
- 3.4 Drawing B5 shows (and any gasket built to this drawing would exhibit) two concentric beads around each cylinder bore hole. One of these beads joins with one

of the beads around the adjacent cylinder bore hole to form a common bead, while the other bead continues uninterrupted around the cylinder bore hole.

Thus, referring back to section 2.3 of this decision, the feature of claim 1 as granted, namely "ring-like beads (3) for sealing which are formed around said cylinder bore holes (2) ... **each** of said beads (3) comprising an **independent bead (9) formed in a region other than a region between adjacent cylinder bore holes (2)**" is not disclosed by drawing B5 and would not be exhibited by any gasket built to drawing B5.

3.5 The extent of the junction portion has been discussed in section 2.4 above. Four corresponding junction portions can be seen on drawing B5, extending from where the independent beads meet to where the straight common bead commences. There are eight inner borders between the respective independent bead and the respective common bead. Two of these eight inner borders are distorted on drawing B5 because the drawing was slightly folded when copied, these two inner borders would presumably be the same as the other six inner borders. Each of the remaining six inner borders is shown on drawing B5 as consisting of a straight line which meets the straight line inner border of the common bead with an included angle of 120°. The lines are straight, there is no suggestion of either of them being curved, they meet at an apex and there is no indication of any rounding at this apex.

Thus drawing B5 does not disclose **arcuate** inner borders connecting the inner borders of adjacent independent

beads to the inner borders of the common bead with a **smooth curve**.

The appellant argued that gaskets made to the drawing B5 would exhibit rounding at the bead intersection, as shown by A8 and G1. However even if in practice there would be rounding where the aforementioned beads meet (i.e. where the included angle of 120° is shown), this would not alter the fact that the rest of the inner border would be straight. Thus the two straight lines on drawing B5 would still be straight lines on the gasket produced according to drawing B5, there would merely be rounding at the intersection. The straight line inner border of the junction portion on drawing B5 is about 5 mm long (the drawing is full scale) whereas the rounding on picture 2.3 of G1 relied upon by the appellant is very much smaller and the drawing B5 itself is marked ".040 MAX. RADIUS AT BEAD INTERSECTIONS" i.e. 1 mm. Thus, even if a gasket made according to drawing B5 had rounding at the bead intersection of the type illustrated on picture 2.3 of G1, the vast majority of the inner border of the junction portion would still be straight. The appellant argued that the inner borders of the junction portions of a gasket made according to drawing B5 would be rounded as evidenced by A8 but it will be seen later in this decision that the board does not accept that A8 consistently teaches the provision of rounded inner borders.

3.6 Thus for the reasons given in sections 3.4. and 3.5 above, even if a gasket had been built to drawing B5 it would not have destroyed the novelty of the subject-matter of claim 1 as granted.

3.7 This allegation of public prior use was filed at an extremely late stage in the proceedings, it is not the same allegation that the board gave the appellant time to substantiate and the allegation, even if accepted, would not result in the gasket of claim 1 as granted being anticipated.

Accordingly the board sees no purpose in having the department of the first instance investigate whether gaskets were actually produced to the internal drawing B5 and whether they were made available to the public before the priority date.

The allegation of public prior use based on documents B1 to B7 is not admitted into the proceedings (Article 114(2) EPC).

3.8 The respondent offered to file a recently purchased gasket bearing the Buick Part No. 1350280 (the same number as that of drawing B5) to show that the gasket did not correspond to the drawing. This offer was resisted by the appellant on the grounds that the gasket was probably a grey product not conforming to the original manufacturer's specification. The board was able to decide on the relevance and admissibility of the alleged prior use based on documents B1 to B7 without the aid of the recently purchased gasket and therefore did not admit it into the proceedings.

4. *Gasket A8 - novelty*

4.1 A8, an actual sample of a gasket, has been accepted as being publicly available prior art.

4.2 Like the gasket shown by drawing B5, the gasket A8 has two concentric beads around each cylinder bore hole. One of these beads joins with one of the beads around the adjacent cylinder bore hole to form a common bead, while the other bead continues uninterrupted around the cylinder bore hole. Thus the gasket A8 does not destroy the novelty of the gasket according to claim 1 as granted for the same reasons given in section 3.4 above.

4.3 The extent of the junction portion has been discussed in section 2.4 above. Six corresponding junction portions can be seen on the gasket A8, extending from where the independent beads meet to where the straight common bead commences. There are twelve inner borders between the respective independent bead and the respective common bead. Looking at the face of the gasket bearing the marking "UP" and with the prong bearing the marking "VICTOR" at the top left, the board will number the twelve inner borders A1, A2, B1, B2, C1 and C2 from left to right in the upper row and D1, D2, E1, E2, F1 and F2 from left to right in the lower row.

Looking at the upper row, the board considers that inner borders A1, B1, B2 and C2 can be described as smoothly curved but that inner borders A2 and E1 are certainly not curved. It is more difficult to decide on the inner borders of the lower row but after careful consideration the board concludes that at least inner borders D2, E1, E2, F1 and F2 are only curved where they meet the inner borders of the common beads but are straight for the remaining majority of their length. Thus only one of the six junction portions is curved on **both** inner borders, namely B. However the radius of

curvature here is more than that of the cylinder bore holes so that the feature of claim 1 as granted of the curve having (i.e. including, see the above section 2.7) a radius of curvature smaller than that of said cylinder bore holes is not satisfied at junction portion B.

4.4 The appellant argued that bead intersections are never sharp-cornered but always rounded, as shown by the study G1. However even if there is rounding where each inner border of the junction portion meets the respective inner border of the common bead, this is not a deliberate curving all along the inner border of the junction portion as required by claim 1 as granted but merely a local rounding of small extent because the rounding on picture 2.3 of G1 is very much smaller than the inner borders of A8 and because the drawing A2 to which A8 was supposedly manufactured states ".040 MAX. ALLOWABLE RADIUS AT ALL BEAD INTERSECTIONS" i.e. 1 mm.

4.5 Thus for the reasons given in sections 4.2 and 4.3 above, the gasket A8 is not novelty destroying to the gasket defined by claim 1 as granted.

5. *D1*

5.1 The embodiment of Figs. 3 and 4 of D1 (see column 3, line 58 to column 4, line 15) does not read onto claim 1 as granted at least because the independent beads B12a formed around the cylinder bore holes Hc extend between the adjacent cylinder bore holes Hc and so are not "formed in a region other than a region between adjacent cylinder bore holes", see the above section 2.3.

5.2 Moreover lines 2 to 7 of column 4 of D1 state that the reinforcement bead B15 between the cylinder holes Hc is forked at its ends and cuts the neighbouring beads B12a. The forked ends are junction portions joining the complete ring beads B12a to the reinforcement bead B15 but, although a part of each inner border of each forked end is curved, the inner border joins the respective complete ring bead B12a not smoothly (as required by feature c7 of the division of claim 1 as granted) but at a sharp angle.

5.3 The subject-matter of claim 1 as granted is thus novel over the disclosure of D1.

6. D2

6.1 The appellant presented the following argument for the first time in the oral proceedings, illustrating it by drawing on a flip chart. The board will reproduce the essentials of the argument by referring to Fig. 1 of D2 and superimposing two imaginary clock faces on respectively the left and right hand cylinder bore holes 6 and 8.

6.1.1 The appellant argued that the independent bead 12 of the left hand cylinder bore hole 6 ends roughly at the dotted circle II i.e. at about half-past one (1.30) on the left hand clock face. The junction portion is shown inside the dotted circle II, it extends from about 1.30 on the left hand clock face rightwards to end where it leaves the dotted circle i.e. at about 10.30 on the right hand clock face. This junction portion joins the common bead which is located between the cylinder holes.

The appellant maintained that this junction portion is encompassed by an arcuate outer border (part of the outer edge of the continuation of beads 12 and 14, the part being that part inside the dotted circle II) which connects the outer borders of the adjacent independent beads 12 and 14 with a smooth curve. Further this junction portion is encompassed by arcuate inner borders, one such inner border being part of the inner edge of the continuation of bead 12, the part being that part inside the dotted circle II) and the other such inner border being part of the inner edge of the continuation of bead 14, the part again being that part inside the dotted circle II). Each of these parts connects the inner border of the adjacent independent bead 12 or 14 to the respective inner border of the common bead 16 with a smooth curve. This smooth curve has a radius of curvature smaller than that of said cylinder bore holes (the radius being centred not on the cylinder bore hole side of the junction portion but on the opposite side, inside the hole 10 inside the dotted circle II).

The appellant argued in effect that the independent bead 12 is the C-shaped portion outside the dotted circle II and the junction portion is inside the dotted circle II.

- 6.1.2 However there is no justification for arbitrarily dividing the bead construction shown on Fig. 1 of D2 like this and creating an imaginary overlapped junction portion. The board is unable to check whether the description of D2 might provide such a justification

because the description is in Japanese and no translation is on file. The appellant moreover opposed the respondent filing a translation unless the oral proceedings were adjourned to a future date to give the appellant time to check the authenticity of the translation. Given that this particular novelty attack was presented only at the oral proceedings (which in principle are intended to finish the debate so that a decision can be taken) the board decides to judge the relevance of D2 on the basis of its drawings alone.

According to claim 1 as granted (see c2 of the division in the above section 2.1), the junction portion is where the independent beads join with each other. On the other hand, the junction portion envisaged by the appellant includes portions of the independent beads where they are plainly still independent beads (i.e. the beads formed in a region other than a region between adjacent cylinder bore holes) and where these independent beads have by no means started to unite.

- 6.2 It is unclear whether there is anything that might be called a junction portion on Fig. 2 of D2 which shows the common bead 16 joining the independent beads 14 abruptly. As Fig. 2 shows the centre lines of the independent beads 12 and 14 and of the common bead 16 meeting at a point indicated by the upper of the lead lines from the reference numeral 18, it might be that one could define a junction portion as an approximately square area around this junction point 18, bordered at the top by the outer border of bead 12 meeting the outer border of bead 14, at the bottom by the line joining the inner border of bead 12 to the inner border of bead 14, and at the sides by extensions of the

borders of the common bead 16. However as the common bead 16 is shown joining the independent beads 14 abruptly at angles of a little over 90°, there is no explicit disclosure of the feature of the characterising portion of claim 1 as granted of arcuate inner borders which connect the inner borders of adjacent independent beads to the inner borders of the common bead with a smooth curve.

The appellant argued that the study G1 proves that bead intersections are never sharp-cornered but always rounded. However the board finds that even if there were in practice rounding at the inner corners on Fig. 2 of D2, this would be local, unintentional rounding of small extent and not deliberate, smooth curving all along the inner border of the junction portion as required by claim 1 as granted. Local, unintentional rounding of small extent plainly would not alter the face-to-face pressure characteristics of the gasket and so would not achieve the effects produced by the present invention.

6.3 The subject-matter of claim 1 as granted is thus novel over the disclosure of D2.

7. *D4*

7.1 The embodiment of Fig. 2 of D4 does not exhibit all the features of claim 1 as granted. Firstly the outer borders of the independent beads 10 meet at a V-shaped point instead of there being a smooth curve. Secondly each inner border is shown as changing from being circular where it is the border of the independent bead to become straight near the junction portion and to

continue straight until it meets the inner border of the common bead. Lines 29 to 64 of column 2 of D4 explain that the bead width L_1 shown on Fig. 2 is "measured at the **apex** of the Y-shaped configuration, that is directly at the **point** where the two legs 18 split". Thus there is no indication of rounding. Even if in practice there were a rounding where the inner borders meet, this would be a local rounding of small extent and not a deliberate curving all along the inner border of the junction portion.

7.2 Although the inner border of the junction portion is shown smooth and arcuate on Fig. 3, its radius of curvature is always larger than that of the cylinder bore hole. Thus the totality of feature c7 of claim 1 as granted is not disclosed. Moreover, as with the embodiment of Fig. 2, the outer borders are not smoothly curved.

7.3 The subject-matter of claim 1 as granted is thus novel over the disclosure of D4.

8. *Inventive step*

8.1 D2

8.1.1 The closest item of the prior art (i.e. the starting point for the assessment of inventive step) is the document D2, and the difference of the claimed gasket thereover is the encompassing of the junction portion by arcuate inner borders which connect the inner borders of adjacent independent beads to the inner borders of the common bead with a smooth curve having a

radius of curvature smaller than that of said cylinder bore holes.

8.1.2 The problem to be solved is to improve the uniformity of the face-to-face pressure. This is solved by the tailoring of the junction portion as defined in feature c7 of claim 1 as granted.

8.1.3 D2 itself provides no hint in the direction of providing the feature c7. Moreover, even if the skilled person realised that the junction portion described in section 6.2 above was not ideal, the board concludes in section 8.6 below that there is nothing in the rest of the prior art to help him arrive at the claimed invention.

8.2 A8

8.2.1 The board cannot accept that the gasket A8 is the closest prior art or starting place for the assessment of inventive step. It dates from 1965 and has long been superseded by other gaskets in this active field undergoing continuous development.

8.2.2 Even if it were accepted to be the correct starting point, it must be remembered that A8 has three beads between the cylinder bore holes. Although gaskets with only a common bead between the cylinder hole bores are known (e.g. from D2 and D4), it does not automatically follow that it would be obvious to modify a gasket with three beads between cylinder hole bores to arrive at a gasket with only one such bead. If the skilled person wants a gasket with only one bead between cylinder hole bores then he will start with a modern one bead gasket.

The board thus sees no reason why the skilled person should be motivated to start from the antiquated gasket A8 and why he should change from having three beads between the cylinder holes to having only a common bead.

8.2.3 Even if he had proceeded this far the board does not see that he would be led to make all the junction portions the same and indeed, if doing so, why he would choose to make each junction portion smoothly curved and to provide at least portions of the smooth curves with radii less than those of the cylinder bore holes. The argument of the appellant impermissibly results from an ex post facto analysis.

8.2.4 The appellant argued that the junction portions are different where there are valve pockets, and that, if the skilled person wanted to make a gasket without valve pockets he would make all the junction portions the same. However as the board does not see that the junction portions D, E and F (where there are no valve pockets) have arcuate inner borders connecting the inner borders of adjacent independent beads to the inner borders of the common bead with a smooth curve, the board cannot agree with the appellant that making all the junction portions the same would yield a gasket satisfying claim 1 as granted.

8.3 The claimed subject-matter is inventive over D1. The extra bead B15 in D1 is there to stop leakage if one or both beads B12a leak, see column 4, lines 9 to 15. So the document sets out to provide a three-bead construction. It would therefore go against the teaching, and it would therefore not be obvious, to

remove the beads 12a in the region between the cylinder bore holes.

8.4 D4 shows on Fig. 2 straight inner borders and on Fig. 3 curved inner borders of radius greater than the cylinder bore holes. Each provides a way or proceeding from the independent beads to the common bead. There is no hint in D4 to encourage the skilled person to adapt either of the types of inner borders to arrive at that defined in claim 1 as granted.

8.5 A combination of the teachings of D2 and D4 would not yield the claimed gasket because D4 only teaches a straight inner border (Fig. 2) or a curved inner border whose radius of curvature is always larger than that of the cylinder bore hole (Fig. 3).

The board considers it unlikely that the skilled person would modify the gaskets of any of D1, D2 or D4 by making use of the gasket A8. Not only would he be unlikely to seriously consider the old gasket A8 but even if he did it is by no means clear what teaching he would draw from it as the shaping of its inner borders varies over the gasket.

8.6 The board thus cannot see that any of the prior art documents relied upon in the appeal proceedings (taken singly or in combination) would lead the skilled person in an obvious manner to the subject-matter of claim 1 as granted.

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

9. Thus claim 1 as granted is patentable as are claims 2 to 8 which are dependent thereon. Accordingly the patent can be maintained unamended i.e. as granted.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Magouliotis

M. Ceyte