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D E C I S I O N
of 27 March 2001

Case Number: T 0140/99 - 3.2.1

Application Number: 92919878.6

Publication Number: 0606281

IPC: F16J 15/12

Language of the proceedings: EN

Title of invention:
Seal arrangement

Patentee:
FLEXITALLIC LIMITED, et al

Opponent:
Kempchen & Co. GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56, 123(2), (3)

Keyword:
"Addition of subject-matter (no)"
"Extension of scope (no)"
"Novelty (yes)"
"Inventive step (yes)"

Decisions cited:
T 0371/88

Catchword:
-



Case Number: T 0140/99

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 27 March 2001

Appellant: Kempchen & Co. GmbH
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Representative: Albrecht, Rainer Harald, Dr.-Ing.
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Respondent: FLEXITALLIC LIMITED
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Representative: Sherrard-Smith, Hugh
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Decision under appeal: Interlocutory decision of the Opposition Division
of the European Patent Office posted 2 December
1998 concerning maintenance of European patent
No. 0 606 281 in amended form.

Composition of the Board:

Chairman: F. Gumbel
Members: S. Crane
G. Weiss

Summary of Facts and Submissions

- I. European patent No. 0 606 281 was granted on 5 March 1997 on the basis of European patent application No. 92 919 878.6.

Claim 1 of the granted patent reads as follows:

"A seal arrangement comprising a guide ring (16) and a spiral wound gasket located radially within the guide ring, said spiral wound gasket comprising an annulus constituted by a plurality of superposed turns (10,12,13) of a profiled metal strip wound upon itself to form a spiral and, interposed between at least some of said superposed turns (10), a number of turns (11) of a relatively soft sealant material in strip form, together with stop means comprised of the guide ring (16) which limits axial compression of said gasket, characterised in that the width of said metal strip (10,12,13) being selected so that prior to use the axial thickness of the wound metal spiral is approximately equal to the axial thickness of the guide ring (16) and the width of the strip (11) of relatively soft sealant material being selected so that prior to use, it projects a distance of from 1 to 2mm on both sides of the gasket from said superposed metal turns (10,12,13) in a direction axially of said annulus."

Dependent claims 2 to 8 relate to preferred embodiments of the seal arrangement according to claim 1.

- II. An opposition against the granted patent was filed by the present appellants on the grounds that granted claim 1 contained subject-matter extending beyond the content of the application as filed (Article 100(c)

EPC) and that the claimed seal arrangement lacked inventive step with respect to two of their own publications, henceforth designated documents D1 and D2.

Subsequently, with a letter dated 16 October 1998, the appellants indicated they had become aware of a seal arrangement designated Tombo No. 1839-R-A1, which had been put on sale by the Nichias Corporation at the latest in 1986 and which fully anticipated granted claim 1. With a letter dated 9 November 1998 the appellants filed a declaration of Mr Eric Soh Sin Boon concerning the alleged prior use and offered him as a witness for the same. Annexed to the declaration were inter alia a copy of Japanese utility model JP-U-63 40692 (document D4), published on 24 October 1988, together with a partial translation into English and a copy of a catalogue of the Nichias Corporation (document D3) published in 1984.

III. At oral proceedings on 16 November 1998 the Opposition Division decided pursuant to Article 114(2) EPC to disregard the late-filed evidence concerning the alleged prior use.

In response to the objection of added subject-matter the present respondents (proprietors of the patent) submitted an amended version of claim 1 in which the last clause now read:

"the width of the strip (11) of relatively soft sealant material being selected so that prior to use, it projects a distance on both sides of the gasket from said superposed metal turns (10,12,13) which distance when taken together on both sides is from 1 to 2mm in a

direction axially of said annulus".

The Opposition Division held that this claim was free of any objection under Articles 123(2) and (3) EPC and that its subject-matter was patentable with respect to documents D1 and D2. The written interlocutory decision concerning maintenance of the patent in amended form was posted on 2 December 1998.

- IV. An notice of appeal against this decision was filed on 4 February 1999 and the fee for appeal paid at the same time.

The statement of grounds of appeal was filed on 30 March 1999. In this statement the appellants argued that claim 1 accepted by the Opposition Division offended against Article 123(3) EPC since its scope of protection had been shifted inadmissibly. They also pursued their allegation of anticipation by the public prior use of the Tombo No. 1839-R-A1 seal arrangement and contended that the Opposition Division had erred in disregarding the evidence they had provided. Lastly, they argued that the subject-matter of claim 1 lacked inventive step with respect to documents D1 and D4. Supplementary to the statement of grounds of appeal the appellants filed with a letter dated 28 September 1999 a declaration of Mr Tsutomu Ishizuka, together with five annexes, concerning the alleged prior use of two types of seal arrangement namely the Tombo No. 1839-R and the Tombo No. 1839-R-A1, as well as a full translation into German of document D4.

- V. In a communication pursuant to Article 11(2) RPBA dated 2 October 2000 the Board inter alia referred to some inconsistencies and gaps in the evidence filed in

support of the prior use of the Tombo No. 1839-R-A1 seal arrangement. As far as the Tombo No. 1839-R seal arrangement was concerned the Board indicated that on the evidence available its structure in any case did not appear to conform to the requirements of claim 1 under consideration.

In a reply to this communication dated 27 February 2001 the respondents requested that the witness Mr Ishizuka be heard if there were any doubts arising from his written evidence concerning the prior use and structure of both the Tombo No 1839-R and Tombo No. 1839-R-A1 seal arrangements.

VI. Oral proceedings before the Board were held on 27 March 2001.

During the course of the oral proceedings the respondents submitted a new revised version of claim 1 together with dependent claims 2 and 8 and an adapted description. They requested maintenance of the patent in amended form on the basis of these documents and the drawings as granted.

Claim 1 reads as follows:

"A seal arrangement comprising a guide ring (16) and a spiral wound gasket located radially within the guide ring, said spiral wound gasket comprising an annulus constituted exclusively by a plurality of superposed turns (10,12,13) of a profiled metal strip wound upon itself to form a spiral and, interposed between at least some of said superposed turns (10), a number of turns (11) of a single relatively soft sealant material in strip form, together with stop means comprised of

the guide ring (16) which limits axial compression of said gasket, characterised in that the width of said metal strip (10,12,13) being selected so that prior to use the axial thickness of the wound metal spiral is approximately equal to the axial thickness of the guide ring (16) and the width of the strip (11) of relatively soft sealant material being selected so that prior to use, it projects a distance on both sides of the gasket from all said superposed metal turns (10,12,13) which distance when taken together on both sides is from 1 to 2mm in a direction axially of said annulus."

The appellants requested that the decision under appeal be set aside and the patent revoked in its entirety.

VII. In support of their request the appellants pursued their objection that the amendment to granted claim 1 permitted by the Opposition Division and retained in the present version of the claim offended against Article 123(3) EPC.

Claim 1 as granted could only be sensibly understood in one way, which was that the strip of soft sealant material stood 1 to 2mm above the surface of the superposed turns of metal strip on each side thereof, with the consequence that the strip of soft sealant material must be 2 to 4mm wider than the metal strip. That primary meaning was also fully consistent with the aims of the invention as portrayed in the patent specification from which it was evident that the basic idea of providing a good seal at low clamping pressures was dependent upon there being a significant thickness of freely deformable sealant material on each side of the gasket.

The amendment made to the claim had replaced the implicit requirement of a difference of 2 to 4mm in the relative thickness of the strips by a difference of only 1 to 2mm, thus clearly demonstrating that an inadmissible alteration in the scope of protection had been made. The only basis offered by the appellants for this amendment was the table of values given on page 3 of the description with respect to the embodiment of Figure 3. It is true that when the discrepancy in these values is pointed out it can be seen that the embodiment does not fall within the terms of granted claim 1. That however could not constitute a legitimate reason for amending the claim. In the first place the source of the inconsistency could lie equally well in the table of values as in the claim. In the second, as a matter of principle, there was no justification for interpreting a claim which was clear in its terms by reference to the description.

No objections under Articles 123(2) and (3) EPC were raised against the further amendments to claim 1 introduced during the oral proceedings.

In view of the restrictions added to present claim 1 the appellants made no further comments on the patentability of its subject-matter going beyond those already on file.

VIII. The respondents argued that claim 1 as granted was open to two interpretations and that all they had done was to restrict it to the one which was consistent with the single preferred embodiment. This could not offend against Article 123(3) EPC.

The presently valid claim 1 had now been restricted to

exclude explicitly an arrangement including an additional aluminium strip as found in the allegedly prior used Tombo No. 1839-R-A1 seal arrangement and in the gasket of document D4. The inclusion of the aluminium strip was clearly an essential element of those proposals so to remove it could not be seen as an obvious measure. The structure of the allegedly prior used Tombo No. 1839-R seal arrangement was still, even at this late stage in the proceedings, indefinite. It should therefore be disregarded.

Reasons for the Decision

1. The appeal complies with the formal requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.

2. *Articles 123(2) and (3) EPC*

According to granted claim 1 the width of the strip of soft sealant material is selected so that "it projects a distance of from 1 to 2mm on both sides of the gasket from said superposed metal turns".

From the plain and natural meaning of the language involved the Board finds it difficult to accept the argument of the respondents that the "both sides" term of claim should, or even could, be understood as referring to the two sides considered together. The only sensible interpretation of the claim would instead appear to be that advanced by the appellants, namely that the strip of soft sealant materials projects 1 to 2mm from each side of the superposed metal turns. However, given that the wording of the claim was chosen

by the respondents and accepted by the Examining Division after the problems with the consistency of the preferred embodiment had already been aired, there must clearly be some residual room for doubt. In any case the Board does not see itself called upon to come to a definitive conclusion on this aspect of the issue at hand since, in its view, the premise of the appellants to the effect that it is only permissible to refer to the terms of the description to assist in interpreting a claim if the latter is ambiguous is misplaced. In fact, the first sentence of the Protocol on the Interpretation of Article 69 EPC specifically states that this is not the way that Article should be understood.

On reading the granted patent specification as a whole the person skilled in the art could not fail to notice that there is an apparent inconsistency between the description of the single preferred embodiment as shown in Figure 3 and the terms of claim 1. On page 3 of the description, at lines 40 to 45, there is a tabular comparison of the seal arrangement according to Figure 3 and a typical example of the state of the art. With respect to Figure 3 three values are given "guide ring thickness 3.2mm", "uncompressed spiral thickness 4.5mm" and "exfoliated graphite height above metal windings 1.27mm". It is accepted that the "uncompressed spiral thickness" can only refer to the overall thickness of the gasket, which is equivalent to the thickness of the strip of exfoliated graphite (soft sealant material). On that basis it is immediately clear that the "height above metal windings" of the exfoliated graphite cannot be the amount the strip of this material projects on each side of the turns of metal strip since if it were this strip would only be

4.5 - 2x1.27 = 1.96mm wide, instead of being approximately equal to the 3.2mm thickness of the guide ring. On the other hand, if the "height above metal windings" is taken as referring to the overall axial height (ie width) of the two strips, then the metal strip would have a width of 3.23 mm, a difference of only 0.03mm to the thickness of the guide ring, more than satisfying the "approximately equal" requirement. In the light of this the Board is convinced that the person skilled in the art would not attribute the noted inconsistency to an error in the values given in the description but would instead have cause to interpret claim 1 in their light. The only plausible way of remedying the inconsistency is to give the requirement of the soft sealant strip projecting "a distance of from 1 to 2mm on both sides of the gasket from said superposed metal turns" the meaning specified in the present claim. A further indication that this was indeed the intended meaning can be found in dependent claims 3 and 4 from which can be seen that what is considered important is the overall difference in the width of the strip of soft sealant material in relation to the axial thickness of the guide ring (and thus, given that they are approximately equal) the width of the metal strip.

In a number of decisions, see for example T 371/88 (OJ EPO 1992, 157), the Boards have held that an amendment to a granted claim which prima facie broadens or shifts its scope of protection may nevertheless be allowable if the amended claim merely reflects the fair interpretation of the granted claim in the light of the patent specification taken as a whole. For the reasons explained above this is the case here. Thus the amendment to claim 1 objected to by the appellants does

not offend against Article 123(3) EPC. Furthermore, it is a self-evident corollary of these considerations that the amendment is consistent with Article 123(2) EPC.

The further amendments made to claim 1 during the course of the oral proceedings before the Board find ample basis in the original disclosure and are clearly of a limitative nature. Since these amendments were not objected to by the appellants no further detailed explanations are necessary.

3. *Novelty and inventive step*

Document D4 discloses a spirally wound gasket comprising a plurality of superposed turns of a profiled metal strip, for example of stainless steel, a number of turns of a strip of soft sealant material, for example graphite or PTFE, interposed between some of the turns of the profiled metal strip, and lying radially inside and outside the turns of the strip of soft sealant material a small number of turns of a strip of less soft sealant material, in particular aluminium, also interposed between the turns of the profiled material strip. The purpose of the turns of aluminium strip is to provide lateral support for the strip of soft sealant material, which are considerably wider than the profiled metal strip. Document D4 makes no reference to the use of an outer guide ring with the gasket disclosed.

The allegedly prior used Tombo No. 1839-R-A1 seal arrangement makes use of a stainless steel/graphite/aluminium gasket structure as taught in document D4 together with inner and outer guide rings.

The dimensions contained in annex No. 2 to the declaration of Mr Ishizuka are the following: Thickness of outer guide ring 3.0mm; width of graphite strip 4.5mm; width of aluminium strip 4.1mm.

The restrictions imposed on the subject-matter of present claim 1 by way of the amendments made at the oral proceedings before the Board, which are effective to exclude a seal arrangement comprising turns of two sealant materials of different hardness, have a significant impact on the relevance of document D4 and the allegedly prior used Tombo No. 1839-R-A1 seal arrangement. Since both of these comprise a gasket having as an essential element additional turns of the aluminium sealing strip, whereas claim 1 is restricted to an arrangement where the gasket is constituted solely by the spirally wound profiled metal strip and a number of turns of a single soft sealant material, it is apparent that the claimed seal arrangement is novel with respect to them. Furthermore, given that the provision of the aluminium strip for the specific purpose of supporting the graphite sealant material is the central teaching of document D4, its removal is not something which can be seen as an obvious measure for the person skilled in the art. No incentive to do so can be found in any of the other cited prior art documents and no arguments to this effect have been advanced by the appellants. In these circumstances the hearing of Mr Ishizuka to establish with a sufficient degree of certainty whether the Tombo No. 1839-R-A1 seal arrangement had been publicly prior used or not is unnecessary.

The situation with respect to the Tombo No. 1839-R seal arrangement is different since this does not include

the aluminium strip. However, on the basis of both the published document D3 as well as annex No. 1 to Mr Ishizuka's declaration it would appear that the width of the profiled metal strip used here is significantly greater than the thickness of the outer guide ring and that the difference between the widths of the profiled metal strip and the graphite sealing strip is less than that required by present claim 1. This appreciation is backed up by the compression curve shown on page 7 of document D3 which indicates that the amount of compression of the gasket when it is put into service is of the order of a maximum of 0.5mm compared with the 1mm or more experienced with the claimed invention. In view of this, coupled with the fact that the appellants first mentioned the Tombo No. 1839-R seal arrangement as being of independent relevance in their letter of 27 February 2001 and did not pursue this line of argument at the oral proceedings, the hearing of Mr Ishizuka solely in this respect would clearly not be justified.

The Board has therefore come to the conclusion that the subject-matter of claim 1 is novel and involves an inventive step with regard to the available state of the art (Articles 54 and 56 EPC).

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent with the following documents:
 - claims 1 to 8 and description presented at the oral proceedings;
 - drawings as granted.

The Registrar:

The Chairman:

S. Fabiani

F. Gumbel