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**Datasheet for the decision
of 11 October 2013**

Case Number: T 1061/10 - 3.2.05

Application Number: 05004761.2

Publication Number: 1574760

IPC: F16J 15/08

Language of the proceedings: EN

Title of invention:
Gasket

Patent Proprietor:
ISHIKAWA GASKET CO. LTD.

Opponent:
ElringKlinger AG

Headword:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-



Case Number: T 1061/10 - 3.2.05

DECISION
of the Technical Board of Appeal 3.2.05
of 11 October 2013

Appellant: ISHIKAWA GASKET CO. LTD.
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Representative: Wolfgang Gassner
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Respondent: ElringKlinger AG
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Representative: Hoeger, Stellrecht & Partner Patentanwälte
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Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
10 March 2010 concerning maintenance of
European patent No. 1574760 in amended form.

Composition of the Board:

Chairman: M. Poock
Members: W. Widmeier
G. Weiss

Summary of Facts and Submissions

- I. The appellant (patent proprietor) lodged an appeal against the interlocutory decision of the opposition division maintaining European patent No. 1 574 760 in amended form.
- II. Oral proceedings before the Board of Appeal were held on 11 October 2013.
- III. The appellant requested that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of claims 1 to 8 submitted as main request with letter dated 14 May 2010 or alternatively on the basis of claims 1 to 7 submitted as auxiliary requests 1 or 2 with letter dated 20 August 2013.

The respondent (opponent) requested that the appeal be dismissed.

- IV. Claim 1 of the main request reads as follows:

"A gasket (1) comprising a first metal plate (1a), said gasket being characterized in that the first metal plate (1a) is formed of a plurality of first metal plate pieces (5a-5f, 50-53), each having at least one combustion chamber hole (2) therein, and means (6) for connecting the first metal plate pieces (5a - 5f, 50 - 53) together, said first metal plate pieces (5a - 5f, 50 - 53) being arranged such that the combustion chamber holes (2) are aligned in series and said first metal plate pieces situated adjacent to each other are directly connected together by weld lines, wherein said

first plate pieces (5a-5f) are aligned laterally to form a single layer structure."

Claim 1 of auxiliary request 1 differs from claim 1 of the main request in that the expression "at least" is replaced by the word "just" so that the corresponding feature reads "each having just one combustion chamber hole (2) therein".

Claim 1 of auxiliary request 2 differs from claim 1 of the main request by the following feature added at the end of the claim:

"said gasket further comprising a second plate formed of a plurality of second plate pieces having a structure same as that of the first metal plate pieces (5a-5f), said second plate pieces being disposed on the first metal plate pieces (5a-5f) without fixing thereto".

V. The following documents were in particular referred to in the appeal procedure:

D1: JP-A-7-208606 and English translation thereof,

D11: Technik Tabellen, Metallische Werkstoffe,
Physikalische Eigenschaften, and

D13: JP-A-8-285080 and English translation thereof

VI. The appellant's arguments can be summarized as follows:

Document D1 does not disclose that and how the plate pieces of the gasket are connected to each other. There

is also no implicit disclosure for connected plate pieces because it is possible to ship and mount the pieces as spared parts. According to the teaching of this document, the plate pieces must have different thermal conductivity. Thus, even in an embodiment comprising only metal plate pieces, a person skilled in the art would not connect the plate pieces by welding, because welding of different metals is generally very difficult. Document D11 demonstrates that a combination of two metals having the same thermal expansion coefficient, a prerequisite for a connection by welding, but different thermal conductivity does not exist. Thus, document D1 cannot render the subject-matter of claim 1 of the main request obvious. Document D13 discloses a different kind of gasket where the weld lines do not run between the combustion chamber holes but connect a peripheral part of the gasket with a central part. Thus, also this document cannot suggest connecting the plate pieces of document D1 by welding.

Claim 2 of document D1 specifies peripheral portions (plural) of the cylinders other than the end cylinder. It is thus restricted to at least four cylinders and, consequently, at least four combustion chamber holes. Document D1 discloses therefore a gasket in which only the end plate pieces have just one combustion chamber hole. The middle piece has two or more combustion chamber holes. For this reason document D1 cannot suggest a gasket consisting of plate pieces each having just one combustion chamber hole.

The advantage of a gasket consisting of separate plate pieces is an efficient production because with a limited number of types of plate pieces, i.e. middle

pieces and end pieces, gaskets for any number of cylinders can be produced. In case of a two-layer gasket as specified in claim 1 of auxiliary request 2 this efficiency is further enhanced because no additional types of plate pieces are required. Document D1 does not refer to multilayer gaskets. It would even be a problem, having regard to the required different thermal conductivity of the gasket plate pieces, to apply the concept of this document to multilayer gaskets. Thus, the subject-matter of claim 1 of auxiliary request 2 is not rendered obvious by document D1.

VII. The respondent's arguments can be summarized as follows:

The plate pieces of the gasket of document D1 must be connected in some way with each other because a customer would not accept to receive the gasket as spared parts. At least in the embodiment where all plate pieces are of metal, it is obvious to connect the pieces by welding. According to this document, the plate pieces must have different thermal conductivity. However, this does not imply that they have also different thermal expansion. There is no correlation between the thermal expansion and the thermal conductivity of a metal. But even if the plate pieces had different expansion coefficients it would be possible to weld them. As the patent in suit shows, metals of different hardness, which by nature have different expansion coefficients, can be welded, see column 9, lines 34 to 37. Also document D13 discloses welding of gasket pieces of different hardness, and thus of different thermal expansion, see the paragraph <structure>. Thus, there is no obstacle to connect the

plate pieces of the gasket of document D1, in case they are of metal, by welding. As it is necessary to connect these pieces, it is therefore obvious to connect them by welding.

Although not shown in the drawings, document D1 discloses also a gasket for a three cylinder motor. This follows from claim 2 which is related to a gasket for a motor with more than two cylinders, and from paragraph <0001> which speaks of a combustion engine having three or more cylinders. From the concept underlying this document it further follows that the gasket for a three cylinder motor consists of plate pieces each having just one combustion chamber hole. Thus, the assessment of inventive step of the subject-matter of claim 1 of auxiliary request 1 remains the same as applied for claim 1 of the main request.

Gaskets consisting of two sandwiched plates are usual and commonly known. The concept of document D1 is also applicable to a two-layer gasket so that for the same reasons as the subject-matter of claim 1 of the main request the subject-matter of claim 1 of auxiliary request 2 lacks an inventive step.

Reasons for the Decision

1. Main request

Document D1 discloses a gasket comprising a metal plate formed of a plurality of first metal plate pieces (see Figures 1 to 4 and paragraph <0016> which indicates that all plate pieces may be of metals). Each of the

plate pieces has at least one combustion chamber hole, the plate pieces are arranged such that the combustion chamber holes are aligned in series, and the plate pieces are aligned laterally to form a single layer structure.

Thus, the subject-matter of claim 1 of the main request differs from this prior art in that plate pieces situated adjacent to each other are directly connected by weld lines.

Document D1 is silent about a connection of the plate pieces. However, it is obvious for a person skilled in the art to connect these pieces in some way to each other, because without such a connection the handling of the gasket during storing, transport and mounting would be troublesome. The fact that document D1 requires plate pieces of different thermal conductivity (see paragraphs <0007> and <0016>) is no obstacle that the skilled person will consider a connection of the plate pieces by weld lines, for the following reasons.

As document D13 teaches, it is possible to connect gasket pieces of metals of different hardness by welding (see paragraph <structure>). The hardness of a metal is correlated to its thermal expansion. Document D13 therefore demonstrates that gasket pieces of different thermal expansion can be welded. Whether or not the weld lines run between combustion chamber holes, as shown in the drawings of the patent in suit, or along the periphery thereof, as in document D13, is irrelevant in that context and, moreover, is not a feature of claim 1.

Furthermore, there is no correlation between the thermal conductivity and the thermal expansion of a metal. Thus, even in case of doubt whether the required different thermal conductivity may cause problems when connecting the plate pieces by welding, a person skilled in the art would be able to find suitable metals which have different thermal conductivity but similar thermal expansion, as demonstrates document D11, page 2, for example, with respect to steel C15 and X10Cr13.

Consequently, it is obvious to connect the plate pieces of the gasket of document D1 to each other, and it is obvious to do this by welding. As no further difference is specified in claim 1 of the main request, this obvious treatment of the gasket of document D1 leads to the subject-matter of this claim which, for this reason, does not involve an inventive step.

2. *Auxiliary request 1*

In contrast to claim 1 of the main request, claim 1 of auxiliary request 1 specifies that each plate piece has just one combustion chamber hole.

The disclosure of document D1 encompasses gaskets for a three cylinder motor (see paragraph <structure>, claim 2, and paragraph <industrial applicability>). In case of such a gasket the concept underlying this document, i.e. to provide end plate pieces which differ in their thermal conductivity from the middle plate piece(s), can only be realized if each plate piece has just one combustion chamber hole.

Thus, for the same reasons as detailed above with respect to the subject-matter of claim 1 of the main request, also the subject-matter of claim 1 of auxiliary request 1 lacks an inventive step.

3. *Auxiliary request 2*

Claim 1 of auxiliary request 2 specifies a second gasket plate which has the same structure as and is disposed on the first gasket plate.

Gaskets comprising two or more plates disposed upon each other and having the same structure are commonly known in the art (see, for example, Figures 9(a) to (c) and paragraph [0002] of the patent in suit). Document D1 does not disclose a gasket consisting of two plates disposed upon each other. However, it also does not teach away from such a gasket. It is within the common general knowledge of a person skilled in the art to laminate as many gasket plates as necessary in accordance with the given circumstances. The idea to vary the thermal conductivity of the gasket plate pieces remains untouched when more than one gasket layer is needed, as long as the second layer and the further layers have the same structure as the first one. This idea is therefore no obstacle to increase the number of gasket layers.

Thus, for the same reasons as detailed above with respect to the subject-matter of claim 1 of the main request, also the subject-matter of claim 1 of auxiliary request 1 does not involve an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

D. Meyfarth

M. Poock