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D E C I S I O N
of 17 October 1995

Case Number: T 0473/94 - 3.2.1

Application Number: 88906963.9

Publication Number: 0371063

IPC: F16L 19/08

Language of the proceedings: EN

Title of invention:
Fire resistant pipe couplings

Patentee:
George Fischer Castings Limited

Opponent:
Gebo-Armaturen GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-



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Boards of Appeal

Chambres de recours

Case Number: T 0473/94 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 17 October 1995

Appellant:
(Opponent)

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D-58316 Schwelm (DE)

Representative:

Finkener und Ernesti
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Respondent:
(Proprietor of the patent)

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Representative:

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Decision under appeal:

Decision of the Opposition Division of the
European Patent Office dated 29 April 1994
rejecting the opposition filed against European
patent No. 0 371 063 pursuant to Article 102(2)
EPC.

Composition of the Board:

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

Summary of Facts and Submissions

- I. European patent No. 0 371 063 was granted on 5 February 1992 on the basis of European patent application No. 88 906 963.9.

Claim 1 of the granted patent reads as follows:

"A fire resistant coupling for a pipe comprising a coupling body (2) having an opening therein for receiving the pipe (1), a flexible gasket (6) adapted to surround the pipe (1) and seal the gap between the coupling body (2) and the pipe (1) when the coupling is in use, and means (3) for urging the flexible gasket (6) into the gap, wherein the coupling includes a deformable gasket (14) adapted to surround the pipe (1) and to lie adjacent the flexible gasket (6) when the coupling is in use, characterised in that the deformable gasket (14) is of graphite and is of a size sufficient to seal the said gap independently of the flexible gasket (6) when urged into the gap by the means (3)."

Dependent Claims 2 to 12 relate to preferred embodiments of the pipe coupling defined in Claim 1.

- II. The granted patent was opposed by the Appellants on the basis that its subject-matter lacked inventive step with respect to the state of the art, in particular that represented by:

D1: DE-U-8 607 988.

- III. The opposition was rejected by the Opposition Division with its decision of 29 April 1994.

IV. An appeal against this decision was filed on 7 June 1994 and the fee for appeal paid on the same date. The Statement of Grounds of Appeal was filed on 19 August 1994.

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

V. The Respondents (Proprietors of the patent) requested that the appeal be dismissed.

VI. Oral proceedings before the Board were held on 17 October 1995.

VII. The arguments put forward by the Appellants can be summarised as follows:

According to the document FR-A-2 177 123 (D0), on which the preamble of Claim 1 is based, the deformable gasket is of a soft metal, such as for example copper. It was obvious to the person skilled in the art that the fire resistance of the known pipe coupling could be increased by replacing the soft metal gasket with one of deformable graphite. This was a well known and commercially available gasket material ideally suited to that purpose. Furthermore, it was apparent from document D1 that it had already been proposed in the context of a coupling for domestic gas supply to use a gasket of this material in combination with a conventional gasket in order to give fire resistance.

VIII. In reply the Respondents made essentially the following submissions:

Although gaskets of deformable graphite were known per se they had not been considered suitable for use in pipe couplings. Document D1 did not suggest a gasket of this

material in this context. Instead, the graphite ring proposed there was hard and brittle, and not subjected to axial compression in order to expand it radially to provide a seal, in the way that the deformable graphite gasket of the invention was arranged. This could be seen in particular from the statement in document D1 that the graphite ring was a sliding fit between the pipe end and the coupling body. Accordingly, the person skilled in the art would have had no incentive to replace the soft metal gasket of the pipe coupling known from document D0 by one of deformable graphite.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.
2. *State of the art*
 - 2.1 Document D0, on which the preamble of granted Claim 1 is based, relates to a pipe coupling of the compression type wherein between the coupling body and the compression nut there are arranged a flexible O-ring gasket and a deformable gasket of soft metal, for example copper. On assembly of the coupling tightening of the compression nut first forces the O-ring gasket into a cavity at the end of the coupling body to compress it radially and form a seal between the coupling body and a pipe end inserted therein. Further tightening of the compression nut then forces the deformable soft metal gasket against a tapering surface at the end of the cavity to deform the gasket inwardly to contact the pipe end and close off the cavity in which the O-ring is trapped.

2.2 Document D1 relates to a pipe coupling of the compression type for use in particular in the connection of domestic gas supplies and which is intended to be resistant to high temperatures. The coupling comprises a first rubber profile sealing ring and second graphite sealing ring which sealing rings are separated by a pressure washer. On tightening of the compression nut the rubber sealing ring is axially compressed within a cavity of the coupling body to form a seal with the pipe end. Axial compression of the rubber sealing ring continues until the pressure washer abuts against a shoulder of the cavity. The pressure washer then forms a stop for the graphite sealing ring which can thereby be put under pressure by further tightening of the compression nut (page 4, lines 4 to 7). According to the last paragraph of the description of document D1 the graphite sealing ring slides between the pipe end and the coupling body.

3. *Novelty and inventive step*

3.1 The novelty of the subject-matter of granted Claim 1 has not been in dispute in the opposition or appeal proceedings and need not be gone into in detail here. It is distinguished from the state of the art according to document D0 by the features specified in the characterising clauses of the claim.

3.2 It is the object of the claimed invention to provide a fire resistant pipe coupling, that is a pipe coupling which still provides adequate protection against the leakage of the fluid carried by the pipe when subjected to the high temperatures associated with a fire, which are sufficient to cause breakdown of the conventionally used flexible gasket materials, such as rubber or the like.

The use of fire resistant couplings is of particular importance when the fluid being carried is itself inflammable, for example domestic gas as mentioned in document D1. The coupling described in this document is stated to be resistant to high temperatures rather than "fire resistant" but since fire is the main cause of high temperatures in domestic surroundings it is clear that the prior art coupling is intended to be fire resistant in the sense of the claimed invention. Furthermore, it is equally clear to the person skilled in the art, although the disclosure of document D1 is somewhat sparse in this respect, that the ability of the coupling to withstand high temperatures must be dependent on the graphite sealing ring, since the rubber sealing ring will break down at these temperatures. The graphite ring can only function effectively to provide a seal if, when put under axial pressure by the compression nut, it deforms radially to contact the pipe end and the wall of the cavity in the coupling body. In other words, the person skilled in the art would understand that the graphite sealing ring should be a deformable graphite material and could not be, as contended by the Respondents, a hard and brittle graphite material since this could not provide a seal in the manner envisaged. The passage particularly relied upon by the Respondents in this respect, to the effect that the graphite sealing ring "slides" between the pipe end and the coupling body, would not, in the opinion of the Board, persuade the person skilled in the art that the ring is of a hard and brittle graphite as this makes no technical sense in the circumstances. It seems more probable that this passage is merely intended to indicate the relationship of the radial thickness of the graphite sealing ring to the gap between the pipe end and the coupling body.

Having regard to the explicit and implicit teachings of document D1 as explained above, the Board takes the view that the replacement of the soft metal gasket proposed in document D0 by a gasket of deformable graphite in order to improve the fire resistance of this prior art coupling was an obvious measure for the person skilled in the art. In the introductory description of the specification of the contested patent, where reference is made to document D0, it is indicated that the sole purpose of the soft metal gasket is to prevent creep of the O-ring at high pressure and that it has no independent sealing function. It is indeed true that in document D0 no mention is made of the soft metal gasket acting as a seal. However it is apparent that since this gasket is in use deformed so as to contact intimately the pipe end and the tapered surface of the cavity in the coupling body then it is inevitable that at least a partial seal will be formed thereby. The person skilled in the art would therefore recognise that the effectiveness of this seal can be improved by taking a different deformable material for the gasket which is particularly suited to his needs, in the case of improved fire resistance deformable graphite.

The Board therefore comes to the conclusion that the subject-matter of granted Claim 1 does not involve an inventive step.

Order

For these reasons it is decided that:

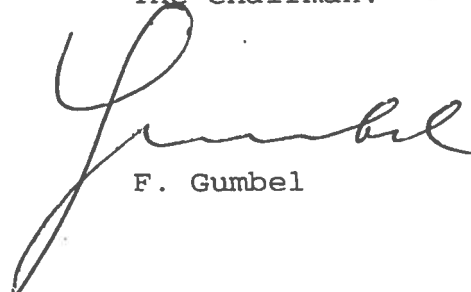
1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel

