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D E C I S I O N
of 13 February 1998

Case Number: T 0496/96 - 3.2.1

Application Number: 90300004.0

Publication Number: 0377486

IPC: F16L 58/10, F16L 55/16

Language of the proceedings: EN

Title of invention:
Lining pipes

Patentee:
Subterra Limited

Opponent:
Rehau AG & Co.
Imbema/U-Liners Rohrsanierung GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes) - non-obvious combination of known features"

Decisions cited:
T 0056/87, T 0042/92, T 0931/92

Catchword:
-



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Boards of Appeal

Chambres de recours

Case Number: T 0496/96 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 13 February 1998

Appellant:
(Opponent I)

Rehau AG & Co.
Rheniumhaus
95111 Rehau (DE)

Other party:
(Opponent II)

Imbema/U-Liners Rohrsanierung GmbH
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26135 Oldenburg (DE)

Representative:

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Respondent:
(Proprietor of the patent)

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Representative:

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Decision under appeal:

Interlocutory decision of the Opposition Division
of the European Patent Office posted 4 April 1996
concerning maintenance of European patent
No. 0 377 486 in amended form.

Composition of the Board:

Chairman: F. A. Gumbel
Members: F. J. Pröls
V. Di Cerbo

Summary of Facts and Submissions

- I. European patent No. 0 377 486 was granted on the basis of European patent application No. 90 300 004.0.

Claim 1 of the granted patent reads as follows:

"A method of lining a pipe comprising reducing a circular liner tube in cross-section, deforming the reduced liner into a non-circular shape, inserting the reduced and deformed liner into the pipe to be lined, reverting the liner towards its original circular shape and then reverting the liner towards its original cross-section."

- II. The patent was opposed by the Appellant (Opponent I) and the Opponent II on the grounds that its subject-matter lacked novelty and/or inventive step with respect to the state of art (Article 100(a) EPC).

Of the prior art documents cited in the course of the opposition proceedings only DE-A-3 519 439 (D3) has played any role in the appeal proceedings.

By an interlocutory decision posted 4 April 1996 the Opposition Division maintained the patent in amended form (only claim 5 had been cancelled) on the basis of the originally filed documents.

- III. The appeal against this decision was filed on 11 May 1996. The fee for appeal was paid and the statement of grounds of appeal was filed at the same time.

- IV. The Appellant requested that the decision under appeal be set aside and the patent be revoked in its entirety. Furthermore, the Appellant, not expecting that further new arguments would be brought forward in the present case, asked for a decision.
- V. The Respondent requested by implication that the appeal be dismissed.
- VI. The Appellant argued that the nearest prior art document D3 (DA-A-3 519 439) discloses all process steps set out in claim 1 of the patent in suit. The first two steps of the claimed process i.e. reducing a circular liner tube in cross-section and deforming the liner into a non-circular shape were clearly described in D3. According to the description of D3, e.g. page 7, line 25 and following lines and page 10, line 16 and following lines the outer dimensions of the liner can be reduced by pressing its circular shaped walls (and making an axially extending groove on the surface of the liner), but also ("aber auch") by axially stretching the liner at a temperature below the crystallization point. In German the words "aber auch" (but also) could not be equated with the word "oder" (or) so that the corresponding sentences in D3 do not describe the alternative use of a single one out of the two process steps.

Given the disclosure of the afore-mentioned two process steps the skilled person would without any inventive skill combine both reduction steps to arrive at a sufficient reduction of the dimensions of the liner so that it can be easily inserted into the pipe and then be reverted to its original shape without leaving kinks as it expands.

VII. In reply the Respondent contradicted the Appellant's arguments arguing that prior to the invention the skilled person had no reason to combine the two alternative methods of diameter reduction disclosed in D3 and had never done so. Furthermore he had not appreciated the conceptual and practical advantage the invention brings to the art in reducing redundant space around the liner by applying these two methods in a specific order.

VIII. The other party (Opponent II) neither lodged an appeal nor commented upon the letters exchanged by the Appellant and Respondent and duly sent to it.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rules 1(1) and 64 and is admissible.
2. *Subject-matter of claim 1 of the patent in suit*
 - 2.1 The method of lining a pipe according to claim 1 of the patent in suit comprises the following steps:
 - (a₁) **reducing** a circular liner tube in cross-section,
 - (a₂) **deforming** the reduced liner into a non-circular shape,
 - (b) **inserting** the reduced and deformed liner into the pipe to be lined,

(c₁) reverting the liner towards its original circular shape and then,

(c₂) reverting the liner towards its original cross-section.

2.2 Thus, the outer dimension of the original liner tube is transferred to its reduced shape by two transformation steps (a₁) and (a₂). After the reduced liner has been inserted into the pipe to be lined (step (b)) it is reverted to its original circular shape by two further steps (c₁) and (c₂).

A skilled person reading the description of the patent in suit, particularly the teaching in column 1, lines 28 to 50, column 2, lines 14 to 19 and column 3, lines 15 to 17 will conclude that a liner tube having an original circular shape with an outer diameter slightly larger than the minimum diameter of the pipe to be lined (slightly oversize liner) cannot completely return from its folded shape to its original shape resulting in a hoop deformity. Particularly the liner tube will not fully unfold once it is inserted in a pipe as long as partial obstructions remain. However if the liner is too small it does not fulfil the requirement of a close fit and there will be an unused gap diminishing the carrying capacity. The claimed solution, on the other hand, makes it possible that even a slightly oversize liner can fully unfold to a diameter less than the inner diameter of the pipe (step (c₁)). Then the liner can be reverted in a second step (c₂) to its original cross-section (or near to it), so that it expands to fill the space around any particular corner or obstruction without excessive folds remaining in the liner. Thus, the combination of the two reduction steps (a₁) and (a₂) and the two reverting steps (c₁) and (c₂) favours a close fit between the liner and the pipe to be lined.

3. *Nearest prior art*

3.1 Document D3 is the only document which has been cited by the Appellant in the statement of grounds of appeal. As concern the further documents cited during the opposition procedure the Board is of the opinion that this further prior art is less relevant than document D3.

3.2 Document D3 (claim 1) discloses a method of lining a pipe which includes the following main steps also present in the method claimed in the patent in suit:

- (a) reducing the outer dimensions of a circular liner tube;
- (b) inserting the reduced liner into the pipe to be lined, and
- (c) reverting the liner towards its original shape.

Dependent claim 2 of D3 further teaches that the liner tube is transformed (folded) by external pressure ("Zusammenpressen") so that an axially extending groove is formed into its surface. Dependent claim 6 also refers to this transformation step (folding) by external pressure and further says that this transformation is preceded by a cooling step carried out immediately after the liner tube has been made by extrusion.

The above-mentioned transformation step (claims 2 and 6) is still more exactly described in the description of D3, page 7, lines 21 to 33 and page 10, line 16 to 19.

Furthermore, dependent claim 4 of D3 sets out that the reduced outer dimension is achieved by axially stretching the liner tube and the last paragraph on page 10 of D3 also refers to this stretching method and reads as follows (translated into English):

"The outer dimension of the (liner) tube can be reached by deformation under external pressure ..., but also ("aber auch") by axially stretching ...".

D3 however does not reveal further details concerning the teaching of this paragraph and the stretching process.

- 3.3 Thus, document D3 is silent as concerns the problems which exist in connection with pipe lining methods as set out in paragraph 2.2 above. Claim 1 of D3 simply defines that the outer diameter of the liner tube (before the reduction step is carried out) corresponds to the smallest inner dimension of the pipe to be lined. D3 discloses neither that the above cited deformation step (a) as set out in claim 1, lines 12 to 15, of D3 can be replaced by two steps nor that an alleged combination of the two reduction steps as set out in the last paragraph of page 10 of D3 would require the sequence of the two steps as claimed by the method according to claim 1 of the patent in suit.

Contrary to the Appellant's opinion the German words "aber auch" which connect the first part of the sentence in the last paragraph on page 10 (concerning the folding reduction process) and the second part of this sentence (concerning a stretching process) can neither semantically nor in the light of the disclosure of D3 as a whole be construed as meaning that both processes are carried out in combination, simultaneously or one after the other.

According to the case law of the Boards of Appeal the disclosure of a patent document does not embrace the combinations of individual features claimed in separate dependent claims or described as alternative solutions and not supported as combination by the description (see T 42/92 of 29 November 1992, not published, point 3.4; T 931/92 of 10 August 1993, not published, point 5.3).

- 3.4 Moreover, the technical teaching of a document should always be considered in its entirety, as it would be done by a person skilled in the art. It is not justified to arbitrarily isolate parts, e.g. the subject-matter of dependent claims 2 or 4 of such a document to derive therefrom technical information which would be distinct from the integral teaching of the document (T 56/87, OJ EPO 1990, 188, point 3.1).

The Board considers consequently that the last paragraph of page 10 of D3 when duly interpreted in the light of the whole disclosure of this document does not teach the combination of the two reduction processes mentioned in the last paragraph.

4. *Novelty*

It follows from the above-cited paragraph 3.3 that the combination of the two reduction steps (as defined on page 10, last paragraph of D3) and consequently the two reverting steps ((c₁), (c₂) of the patent in suit) cannot be derived from document D3.

The remaining prior art documents cited during the examining or opposition procedures do not come closer to the subject-matter of claim 1 than D3.

For these reasons, the subject-matter of claim 1 is considered to be novel within the meaning of Article 54 EPC.

5. *Inventive step*

- 5.1 As mentioned above under point 2.2 the claimed reduction of the outer dimension of the liner in two separate reduction steps instead of a single step is based on the finding that **even an original slightly oversize circular shaped liner**, if it is first reduced in cross-section and then deformed in a non-circular shape, is allowed to expand and to unfold without any folds or kinks in a first reverting step to a diameter less than the inner diameter of the pipe. The original oversize cross-section of the liner and its close fit with the pipe to be lined are then reached by the second reverting step.
- 5.2 Contrary to this teaching set out in the description of the patent in suit claim 1 of D3 claims that the original outer diameter of the liner tube in essence corresponds to the minimum inner diameter of the pipe to be lined, i.e. that no oversize dimension of the liner is admissible.
- 5.3 The considerations according to point 5.1 above underlying the concept of the present invention have no counterpart in D3 and there is nothing leading a skilled person to the claimed method when reading the teaching of D3 and being aware of the alternative reduction processes described there.

Moreover, D3 is also silent as concerns the claimed sequence in which the two reduction processes should be carried out one after the other..

Summarizing, in document D3 there is nothing which could suggest that the two alternatively disclosed reduction steps should be combined and used in a certain sequence within the same lining method. The same applies to the further prior art which did not play any role in the appeal proceedings.

The Board therefore comes to the conclusion that the subject-matter of claim 1 as granted cannot be derived in an obvious manner from the state of the art and accordingly involves an inventive step under Article 56 EPC.

6. It is noted that claim 1 is not drafted in the two-part form containing a pre-characterising part defining all the features of its subject-matter which are known from the closest prior art document D3 as required, wherever appropriate, by Rule 29(1) EPC (see point 3.2 above).

In the present case the two-part form of claim 1 would be considered to be appropriate, however, this deficiency cannot be removed because of the fact that it does not constitute a ground of opposition and is not related to the only amendment (cancellation of claim 5) carried out during the opposition proceedings.

7. For these reasons the Board is satisfied that claim 1 as granted and the remaining claims 2 to 4 which all are appendant thereto are acceptable.

Order

For these reasons it is decided that:

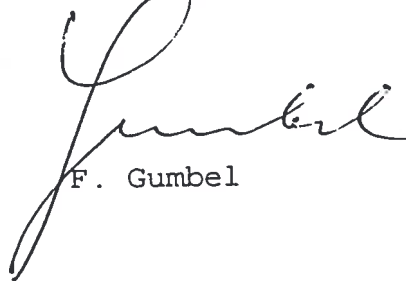
The appeal is dismissed.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel