BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

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File Number: T 45/90 - 3.2.1

Publication No.: 0 101 712

Title of invention: A lining hose for restoring or making conveyor channel

Classification: F16L 55/16

D E C I S I O N
of 10 July 1991

Proprietor of the patent: Forsheda Innovation AB

Opponent: Trelleborg AB

Headword:

EPC Article 56

Keyword: "Inventive step (no)"

Headnote

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

((2))

Case Number : T 45/90 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 10 July 1991

Appellant : (Proprietor of the patent)
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Decision under appeal :
Decision of Opposition Division of the European Patent Office dated 21 November 1989 revoking European patent No. 0 101 712 pursuant to Article 102(1) EPC.

Composition of the Board :

Chairman : F. Gumbel
Members : S. Crane
F. Benussi

Summary of Facts and Submissions

I. European patent No. 0 101 712 was granted with effect from 29 July 1987 on the basis of European patent application No. 83 900 812.5 filed on 1 March 1983, priority being claimed from Swedish application No. 8 201 259 dated 1 March 1982.

II. Independent Claim 1 of the granted patent reads as follows:

"A hose-like lining for restoring or making a conveyor channel or pipeline for fluid, especially water, along an already existing cavity (1) formed of a section of a damaged and untight conventional pipeline or consisting of holes in successively arranged elements, e.g. of insulating material, by insertion of the lining in said cavity, the lining including an inner layer (6) which is fluid-tight, permanently elastic, soft and resistant to the material being conveyed, characterized by the hose-like lining (4) including a covering (5) of durable, pressure-absorbing, non-fluid-tight material which has insignificant ability to expand and contract axially, but is peripherally permanently elastic to a limited degree so as to be expandable in the peripheral sense to a certain limit, and by that the limit of the peripheral elasticity of the hose-like lining is thereby so pre-set in relation to the size of the cavity that the lining, in its expanded state, will reach a diameter essentially not exceeding the normal diameter of the cavity."

Dependent Claim 2 relates to a preferred embodiment of the lining according to Claim 1.

III. The patent was opposed by the Respondents on the ground that its subject-matter lacked inventive step having regard to:

(D1) GB-A-1 580 438
(D2) SE-B-410 121
(D3) A declaration of Mr Hjalmar Persson.

Following a communication of the Opposition Division dated 16 May 1989 pursuant to Article 101(2) EPC, in which it was indicated that the subject-matter of granted Claim 1 did not seem to be novel with respect to document D1, the patent was revoked by decision of 21 November 1989 on this ground.

IV. The Appellants (Proprietors of the patent) filed an appeal against this decision by telex on 16 January 1990, duly confirmed in writing on 18 January 1990, with instructions to debit the appeal fee from their account. The statement of grounds of appeal was filed by telefax on 16 March 1990, duly confirmed in writing on 20 March 1990. With a letter received on 26 September 1990 the Appellants filed new independent Claims 1 to 3 to replace the claims of the granted patent.

V. In communications dated 12 October 1990 and 24 January 1991 pursuant to Article 110(2) EPC the Board objected to the new Claims 1 to 3 inter alia for lack of clarity (Article 84 EPC) and extension of the scope of protection (Article 123(3) EPC). The Board also pointed to the relevance of

(D4) DE-A-2 629 214

as far as the question of inventive step was concerned, this document being mentioned in the introductory description of the contested patent.

VI. In response to these communications the Appellants filed a letter on 26 March 1991 in which they indicated that maintenance of the patent in the granted form was requested.

In support of their request the Appellants have advanced the following arguments:

Both documents D1 and D4 relate to a lining for a pipeline which is drawn into the pipeline in a longitudinally pleated condition in which it is held by bands or the like. On release of the holding means the elasticity of the lining restores it to a circular shape in which it engages the walls of the pipeline. The lining according to the invention has however a normal unpressurized cross-section that is smaller than that of the pipeline. On application of pressure to the pipeline the lining expands up to the internal diameter of the pipeline at which point the cover of the lining becomes effectively rigid so that even if parts of the pipeline wall are missing the lining cannot balloon out of the opening and consequently be damaged. The lining according to the invention also has the advantage that when the pipeline pressure is removed the lining returns to its original smaller diameter and can easily be withdrawn from the pipeline.

Furthermore, the lining according to document D4 is intended for use with unpressurized pipelines so that the problem of preventing "ballooning" of the lining, with which the present invention is primarily concerned, cannot occur there.

VII. The Respondents contest the arguments of the Appellants and request that the appeal be dismissed.

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. Interpretation of Claim 1

In the decision under appeal it was pointed out that granted Claim 1 was directed to a lining for a pipeline or the like and not to the method of inserting this lining into the pipeline. As such, only the technical features of the lining itself could be considered when comparing the subject-matter of the claim to the prior art to establish its patentability. In particular, the feature of the characterising clause of the claim which defines the limit of elasticity of the covering of the lining in terms of the diameter of the cavity of the pipeline in which the lining is to be installed imposed for this reason no limitation on the lining claimed. Furthermore, the relative terms "soft", "resistant to the material to be conveyed", "durable", "insignificant ability to expand and contract axially" and "elastic to a limited degree" as used in Claim 1 had no unequivocal and well recognised meaning and could not therefore distinguish the claimed lining from the prior art.

Although the Board agrees that granted Claim 1 is clearly directed to a lining per se, it cannot agree that the references in the claim as to how this lining is used or how it behaves on insertion into the pipeline have no limitation whatsoever on the lining. Clearly, these references impose the restriction that the lining be so constructed that it can be used and behaves in the way stated in the claim. Thus the Board interprets the feature relating to the elastic limit of the covering of the

lining as meaning that the lining, when subjected in an unrestrained state to the normal working pressure expected in the pipeline into which it is to be installed, will take up a diameter essentially equal to that of the cavity in the pipeline.

Furthermore, the relative terms mentioned above can all be given a sensible technical meaning for the skilled man, particularly when appropriate account is taken of the description, as required by Article 69 EPC.

3. **Novelty**

3.1 The closest state of the art is in the opinion of the Board that disclosed in document D4, which is mentioned in the introductory description of the patent specification.

This document relates to a lining for use in repairing damaged concrete water pipelines and a method of installing the lining. The lining comprises a water-tight layer of rubber which is reinforced by filaments preferably of polyester either embedded in the rubber layer or wrapped around it, see page 11, lines 21 to 23. The lining is drawn into the pipeline in a longitudinally pleated state in which it is held preferably by a combination of underpressure in the lining and an external wrapping band. On the application of overpressure the wrapping band ruptures and a combination of the overpressure and the natural elasticity of the lining return this to a circular cross-section in which it engages the internal wall of the pipeline to be repaired.

Document D4 contains no specific information on the ability of the lining to expand and contract axially or on the degree to which it expands peripherally under the action of the medium carried by the pipeline. Accordingly,

the subject-matter of Claim 1 of the contested patent must be seen as being novel with respect to this state of the art.

3.2 The lining disclosed in document D1 and its method of use are essentially similar to those of document D4 discussed above.

In this case as well there is insufficient information in the prior art disclosure with respect to the properties of the lining under longitudinal tension and internal pressure to justify a finding of lack of novelty of the claimed subject-matter.

3.3 The statement of Mr Hjalmar Persson (document D3) relates to the repair of an underwater rubber pipeline by the drawing therethrough of a lining of smaller diameter. Essentially the same considerations apply to the question of the novelty of the subject-matter of granted Claim 1 with respect to this prior use, which is not contested by the Appellants, as apply to the prior art disclosures of documents D1 and D4.

3.4 Document D2 shows a coupling sleeve for pipes comprising an elastomeric inner part with external spirally wound reinforcement with zones of different pitch angle, these zones having different degrees of peripheral elasticity. It does not therefore relate to a lining for repairing pipelines as specified in granted Claim 1.

3.5 It is apparent from the above that the subject-matter of granted Claim 1 is novel with respect to the state of the art mentioned in the proceedings.

4. Inventive step

4.1 The lining according to Claim 1 of the granted patent, as interpreted by the Board in the light of the description, see point 2 above, is distinguished from the prior art according to document D4 in that:

(a) the covering of the lining has insignificant ability to expand and contract axially;

(b) the peripheral elasticity of the lining is such that under the maximum pressure to be expected in the pipeline to be repaired the lining would adopt a diameter not significantly greater than the internal diameter of the pipeline.

4.2 The technical problem to be solved in relation to the prior art is to be seen in the provision of a lining that can be reliably and readily installed in an existing damaged pipeline or the like and which will secure fluid-tightness of the pipeline even if significant areas of the pipeline wall are broken away.

4.3 Although no mention is made in document D4 of the properties of the lining covering in the axial direction it would be obvious for the skilled man to arrange the covering to provide significant resistance to extension and contraction, since during drawing of the lining into the pipeline it will be subjected to high axial forces. This can be achieved by a number of techniques well known in the art, such as the incorporation of longitudinally extending reinforcing filaments in the covering.

4.4 As for feature (b), reference is made at page 11, lines 15 to 19 of document D4 to the importance of the stiffness of the reinforcement in enabling the use of the lining with

damaged concrete pipelines wherein the lining does not bear over the whole of its external surface on the internal surface of the pipeline. From this passage it is obvious for the skilled man that the reinforcing covering of the lining should be designed to prevent "ballooning" of the lining into gaps of the concrete pipeline when this is intended to carry a pressurized medium. In other words it is obvious to him that the covering should limit the peripheral expansion of the lining in such a way that at the expected maximum working pressure the diameter of the lining is not significantly greater than that of the concrete pipeline involved.

Thus, feature (b) does not extend beyond the normal considerations of the skilled man endeavouring to put the teachings of document D4 into practice.

4.5 The argument of the Appellants that document D4 is concerned only with unpressurized pipelines, such as sewage or drainage channels, and that accordingly the skilled man would not address the problem of "ballooning", cannot be accepted by the Board. Although sewage and drainage channels are indeed referred to in document D4 as one particular field of use it is apparent from the introductory description of this document that the lining is considered generally applicable to water conduits and the skilled man would have no reason for thinking that pressurized conduits were to be excluded therefrom.

The further arguments of the Appellants which go to the different method of installation of the lining according to the patent compared with that of document D4 and differences of behaviour of these two linings in use are also not convincing since these differences do not result from the technical features of the lining contained explicitly or implicitly in granted Claim 1.

4.6 Accordingly, the Board comes to the conclusion that the subject-matter of Claim 1 of the granted patent lacks inventive step with respect to the state of the art and therefore does not meet the requirements of Articles 52(1) and 56 EPC.

5. Since the Board is bound by the single request of the Appellants it is unnecessary to consider the merits of dependent Claim 2.

Order

For these reasons, it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

S. Fabiani F. Gumbel