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Datasheet for the decision of 1 September 2016

Case Number: T 2343/14 - 3.2.05

Application Number: 05713290.4

Publication Number: 1851071

IPC: B44C1/22

Language of the proceedings: EN

Title of invention:
Elevator load bearing member having a jacket with at least one traction-enhancing exterior surface

Applicant:
Otis Elevator Company

Relevant legal provisions:
EPC 1973 Art. 84, 111(1)
EPC Art. 54(3)
EPC 1973 R. 27(1)(c)

Keyword:
Novelty with respect to a document under Article 54(3) EPC - yes
Remittal to the examining division - yes

Decisions cited:
J 0010/07

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Case Number: T 2343/14 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 1 September 2016

Appellant: (Applicant)	Otis Elevator Company Ten Farm Springs Road Farmington, CT 06032 (US)
Representative:	Stephen Gardiner Dehns St Bride's House 10 Salisbury Square London EC4Y 8JD (GB)
Decision under appeal:	**Decision of the examining division of the European Patent Office posted on 30 July 2014 refusing European patent application No. 05713290.4 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairman	M. Poock
Members:	H. Schram
	J. Geschwind

Summary of Facts and Submissions

I. The appellant (applicant) filed a notice of appeal on 9 October 2014 against the decision of the examining division, posted on 30 July 2014, by which European patent application No. 05 713 290.4 was refused. The statement setting out the grounds of appeal was filed on 9 December 2014.

The examining division held that the subject-matter of claim 1 of the main request filed on 20 November 2012 and the subject-matter of claims 1 of the first to fourth auxiliary request filed on 26 June 2014, all identical to claim 1 of the main request, was not new with respect to document WO 2005/094255 (hereafter document D1), Article 54(3) EPC, and that the subject-matter of claim 1 of the fifth auxiliary request filed on 22 July 2013, which differed from claim 1 of the main request in that the word "includes" was replaced by the wording "consists of" was also not new with respect to document D1, see point 3 of the Reasons.

The examining division further held that the term "rough" in dependent claim 10 of the main request was not clear, Article 84 EPC, and that the provisions of Rule 42(1)(c) EPC were not fulfilled for the fourth and fifth auxiliary requests, since these requests no longer contained claims directed to a method including the step of disrupting the surface layer, whereas the description still included such methods, see points 1 and 4 of the Reasons.

II. The appellant requested that the decision under appeal be set aside in its entirety (cf notice of appeal), that any of the sets of claims filed on 9 December 2014 as main request and first to third auxiliary request

are found to be allowable and that oral proceedings be appointed in the event that the main request was not found to be allowable.

III. Claim 1 of the main request reads as follows:

"1. A method of making a load bearing member (40) for use in an elevator system, comprising:

applying a polymer jacket (44) to generally surround at least one tension member (42) and provide a formed assembly; and

finishing the formed assembly by displacing at least some polymeric material on at least one surface (46) of the polymer jacket (44), wherein the jacket (44) comprises polyurethane and the displacing step includes chemically or mechanically removing the material from the one surface (46) to at least partially dispatch some of an amide-rich layer that migrates to the surface of the jacket (44) during the application of the jacket (44), thereby exposing pure polyurethane on at least some of the one surface (46)."

IV. In support of his requests, the appellant submitted essentially the following:

Claim 1 of the main request required that the polymer jacket (44) had "an amide-rich layer that migrates to the surface of the jacket (44) during the application of the jacket (44)" and that "the displacing step includes chemically or mechanically removing the material from the one surface (46) ... during the application of the jacket (44), thereby exposing pure polyurethane on at least some of the one surface (46)".

The only example in document D1 that specified the use of a polyurethane material that contained components

that would lead to formation of an amide-rich surface layer was the example of Figure 5. However, this example used a melt fracture technique that did not allow that amide-rich surface layer to fully form (see page 9, lines 15 to18 and line 24). Instead, turbulence caused by the melt fracture prevented those additive components from migrating to the surface. When the additives were prevented from forming the usual surface layer, even if a subsequent surface material removal technique was applied, the underlying material that was exposed was not pure polyurethane as it still contained additives. Thus document D1 failed to disclose the two features mentioned above.

The subject-matter of claim 1 of the main request was therefore new vis-à-vis document D1.

Reasons for the Decision

1. The application under consideration was filed on 9 February 2005. According to Article 7 of the Act revising the EPC of 29 November 2000 (Special edition No. 4 OJ EPO 2007, 217), the Decision of the Administrative Council of 28 June 2001 on the transitional provisions under Article 7 of the Act revising the EPC of 29 November 2000 (Special edition No. 4 OJ EPO 2007, 219) and J 0010/07 (OJ EPO 2008, 567), Article 84 EPC 1973 and Rule 27(1)(c) 1973 and Articles 54(3) and 123(2) EPC apply in the present case.

2. The appeal is admissible.

3. *Allowability of the amendments, Article 84 EPC 1973*

3.1 Claim 1 of the present main request differs from claim 1 of the main request on which the decision was based in that the wording "the finishing step" was replaced by the wording "the displacing step".

It is clear that "the displacing step" refers to the feature "by displacing at least some polymeric material on at least one surface (46) of the polymer jacket (44), wherein the jacket (44) comprises polyurethane".

The amendment is hence merely a clarification and meets the requirements of Article 84 EPC 1973.

3.2 Since the claims of the main request no longer contain dependent claims directed to surface irregularities that make the surface rough, cf point 1 of the Reasons of the decision under appeal, said claims also fulfil the requirements of Article 84 EPC 1973.

4. *Objection of lack of novelty under Article 54(3) EPC*

4.1 The invention relates to a method of making an elevator load bearing member having a specialized jacket surface comprising polyurethane. The jacket must have a desired level of traction when installed in an elevator system, ie a desired coefficient of friction between the jacket and an elevator sheave surface.

Most polyurethane suppliers provide polyurethane stock that includes additives such as wax, mold release agents and components that facilitate processing the urethane. These additives typically migrate to the surface of a jacket during a molding process and create an amid-rich surface layer having a traction that does not meet the traction requirements mentioned above.

The object the invention seeks to solve is to provide a method of making an elevator load bearing member for use in an elevator system that minimizes or eliminates the undesirable friction characteristics of a polymer jacket comprising polyurethane due to the presence of an amid-rich surface layer.

This problem is solved by the subject-matter of claim 1 of the main request. In particular, the method comprises the step of "[finishing the formed assembly by] displacing at least some polymeric material on at least one surface (46) of the polymer jacket (44)", which step "includes chemically or mechanically removing the material from the one surface (46) ... during the application of the jacket (44), thereby exposing pure polyurethane on at least some of the one surface (46)".

4.2 Interpretation of claim 1 of the main request

The first and second steps in said claim read: "*applying a polymer jacket (44) to generally surround at least one tension member (42) and provide a formed assembly*" (hereafter forming step) and "*finishing the formed assembly [by displacing at least some polymeric material on at least one surface (46) of the polymer jacket (44), wherein the jacket (44) comprises polyurethane and the displacing step includes chemically or mechanically removing the material from the one surface (46) to at least partially dispatch some of an amide-rich layer that migrates to the surface of the jacket (44) during the application of the jacket (44)], thereby exposing pure polyurethane on at least some of the one surface (46)*" (hereafter finishing step). The expression in square brackets,

which were inserted by the board, is hereafter referred to as "displacing step".

The person skilled in the art will understand the term "finishing" in claim 1 of the main request as putting a particular surface texture on the formed assembly.

The macroscopic shape of the "formed" assembly is not necessarily the final shape of the assembly comprising a polymer jacket 44 and at least one tension member or cord 42, since the passage in the description on page 7, line 30, to page 8, line 4, of the application indicates that the finishing station may include a forming device, eg for providing the jacket with a rectangular cross section.

While the examining division correctly deduced from this passage that finishing may include forming (see point 3.3.2 of the Reasons), the converse is not true: "forming [an assembly]" does not include "finishing [the formed assembly]".

The wording of the steps of "applying a polymer jacket (44) ... and provide a formed assembly" and "finishing the formed assembly ..." in claim 1 of the main request (emphasis added by the board) is unambiguous and suggests that the forming step precedes the finishing step. From the claims, the description and the Figures of the patent application read as a whole it cannot be inferred, that the forming step and the finishing step might be simultaneous.

In the judgment of the board, the forming step and the finishing step reiterated in claim 1 of the main request are therefore separate steps.

According to method claim 1 of the main request the polyurethane stock used in said method leads to an amid-rich surface layer. Said claim therefore concerns a method whereby the initial polyurethane is not pure.

In the judgment of the board, the term "pure" in the expression "thereby exposing pure polyurethane" must be construed as "substantially pure", in the sense that the traction and friction characteristics of the exposed polyurethane of the load bearing assembly made by the claimed process are substantially the same as the traction and friction characteristics of an assembly made by a similar process, whereby the initial polyurethane is pure.

4.3 Document D1 represents a state of the art under Article 54(3) EPC. This document is not to be considered in deciding whether there has been an inventive step, cf Article 56 EPC 1973, second sentence.

In the section "Summary of the invention" starting on page 2, line 7, the following is stated (see page 2, line 29, to page 3, line 1): "In one example, causing melt fracture roughens the surface. In this example, the melt fracture interrupts a surface layer that contains components other than pure polyurethane. The resulting melt fracture prevents the amide components from completely migrating to the one surface ...".

In the section "Detailed description of the preferred embodiments" starting on page 4, line 1, the method, whereby during extrusion of the polymer melt fracture is caused through which the surface of the jacket becomes roughened, is described on page 8, line 13, to page 9, line 29, and shown in Figure 5.

This is the only example in document D1, wherein a polyurethane stock is described, which includes components that are not pure polyurethane. When a melt fracture technique, as schematically shown in Figure 5 is employed, additional roughness may be accomplished using a roughening device within the surface finishing station 60 shown in Figure 4, see page 8, lines 19 to 21. The use of said roughening device (see eg Figures 6 to 11) qualifies as a displacing step in the sense of claim 1 of the main request.

On page 9, lines 11 to 18 it is stated: "*Reducing the temperature of the opening 80 relative to the temperature in the mold housing 72 effectively cools the surfaces of the jacket 44 as the assembly exits the mold housing 72. During such cooling, a portion of the jacket material is effectively solidified against the wall of the opening 80 and then torn away as the assembly continues through the mold machinery. This effect induces or creates turbulence within the jacket material and prevents the components within the polyurethane stock material that are not pure polyurethane from completely migrating to the surface 46 of the jacket 44*" (emphasis added by the board).

In the next passage it is explained why this effect is special. The components within the polyurethane stock material other than pure polyurethane, such as additives including waxes, mold release agents, etc., *normally* lead to the formation of an amide rich layer on an exterior surface, cf page 9, lines 18 to 22. However, inducing melt fracture allows the typical amide-rich layer to only partially form and results in an irregular rough surface, cf page 9, lines 23 to 26.

Since melt fracture partially prevents the additives within the polyurethane stock from completely migrating to the surface, the polyurethane below the partially formed amide-rich layer cannot be said to be pure polyurethane.

Document D1 does not therefore disclose the last feature of claim 1 of the main request, viz "thereby exposing pure polyurethane on at least some of the one surface (46)".

4.4 The subject-matter of claim 1 of the main request is therefore new with respect to document D1, Article 54(3) EPC.

5. *Objection under Rule 42(1)(c) EPC in the decision under appeal*

5.1 The examining division held (see point 4 of the Reasons of the decision under appeal) that the provisions of Rule 42(1)(c) EPC were not fulfilled for the fourth and fifth auxiliary requests, since the description had not adapted to these sets of claims. In particular, the feature "disrupting the surface" was no longer covered by said sets of claims, whereas the description still included this feature as falling within the scope of the claimed invention.

5.2 Rule 42(1)(c) EPC corresponds to Rule 27(1)(c) EPC 1973 ("Content of the description"), which provides that the description shall "*disclose the invention, as claimed, in such terms that the technical problem (even if not expressly stated as such) and its solution can be understood, and state any advantageous effects of the invention with reference to the background art*".

It may be noticed that boards of appeal frequently cite this provision as the basis for the problem and solution approach, see Case Law of the Boards of Appeal, 7th edition 2013, I.D.2 and I.D.4.2 (for the purpose of requesting the applicant or patentee to bring the description and drawings into conformity with the claims on file, boards of appeal usually refer to Article 84 EPC, viz "*The claims ... . They shall ... be supported by the description*").

5.3 The set of claims of the main request no longer contains claims that are *expressis verbis* directed to a method including the step of disrupting the surface layer.

Since the description currently on file (see the communication dated 10 May 2012 of the examining division, point 1) contain passages (see eg page 2, lines 20 to 22, page 4, lines 20 to 22, page 7, lines 3 to 11, of the published version of the application as filed (hereafter: application as filed), and drawings (see eg Figure 9) that concern disruption of the surface layer, it must be investigated whether claim 1 of the main request is supported by the description.

The board is of the opinion that the displacing step in claim 1 of the main request encompasses "disrupting the surface". This is clear from the set of claims as filed. Claim 1 as filed is directed to "A method of making a load bearing member for use in an elevator system, comprising: displacing at least some material on at least one surface of a polymer jacket that generally surrounds at least one tension member". Dependent claims 2, 5 and 7 all refer to claim 1 and require that the method of claim 1 including

"chemically removing the material from the one surface", "mechanically removing the material from the one surface" and "disrupting the one surface", respectively.

This also follows from the following. Disrupting the surface can be achieved by a roller as shown in Figure 9, cf page 7, line 3, of the application as filed. Disrupting the surface does not necessarily remove material from the surface, but may only move or deform it, or in other words, displace material from the surface", see page 7, lines 5 and 6, of the application as filed.

5.4 With respect to embodiments directed to methods including the step of disrupting the surface layer, claim 1 of the main request is supported by the description.

6. It follows from the above that the grounds for refusing the application no longer hold for the main request. The decision under appeal is therefore to be set aside.

Moreover, the amendment mentioned in point 3.1 above overcomes the objections under Article 123(2) EPC and Article 84 EPC 1973 made *obiter dictum* in the decision under appeal, see page 6, point 1. Since the main request no longer contains the independent method claim 2 of the main request on which the decision was based, the objection under Article 123(2) EPC against said claim made *obiter dictum* in the decision under appeal no longer hold for the main request, see page 6, point 2.

Since the main request is found to be allowable with respect to the grounds for refusing the application and

also with respect to the further objections raised *obiter dictum* in the decision under appeal, there is no need to appoint oral proceedings (which were merely auxiliary requested in the event that the main request was found not to be allowable).

The examining division has not yet decided whether the application meets all the requirements of the EPC, including the question of inventive step, Article 56 EPC 1973. It is thus considered appropriate to remit the case to the department of first instance for further prosecution, Article 111(1) EPC 1973.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the examining division for further prosecution.

The Registrar: The Chairman:

D. Meyfarth M. Poock

Decision electronically authenticated