Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 10 January 2017

Case Number: T 2283/12 - 3.2.08

Application Number: 04821853.1

Publication Number: 1725375

IPC: B24B1/00

Language of the proceedings: EN

Title of invention:
Method of making an ELEVATOR LOAD BEARING MEMBER HAVING A JACKET WITH AT LEAST ONE ROUGH EXTERIOR SURFACE

Patent Proprietor:
Otis Elevator Company

Opponent:
INVENTIO AG

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 2283/12 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 10 January 2017

Appellant: (Patent Proprietor)	Otis Elevator Company 10 Farm Springs Road Farmington, CT 06032 (US)
Representative:	Ramsay, Laura Anne Dehns St Bride's House 10 Salisbury Square London EC4Y 8JD (GB)
Respondent: (Opponent)	INVENTIO AG Seestrasse 55 Postfach 6052 Hergiswil (CH)
Representative:	Flügel Preissner Schober Seidel Patentanwälte PartG mbB Nymphenburger Strasse 20a 80335 München (DE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 16 August 2012 concerning maintenance of the European Patent No. 1725375 in amended form.**

Composition of the Board:

Chairman	I. Beckedorf
Members:	M. Foulger
	C. Herberhold

Summary of Facts and Submissions

I. The appellant (patent proprietor) lodged an appeal against the interlocutory decision of the opposition decision dated 16 August 2012. The opposition division found that account being taken of the amendments made by the patent proprietor during the opposition proceedings according to the then valid second auxiliary request, the patent and the invention to which it related met the requirements of the EPC.

The notice of appeal and the statement setting out the grounds of appeal were filed within the given time limits.

II. Oral proceedings took place before the Board of Appeal on 10 January 2017. For the course of the oral proceedings and the parties' requests, reference is made to the minutes.

III. The appellant's final requests were that the decision under appeal be set aside and that the patent be maintained in amended form on the basis of one of the sets of claims filed as auxiliary requests 5 to 7 with the letter dated 7 December 2016. (N.B. in the following the original numbering system for the requests will be used i.e. the highest ranking request will still be referred to as auxiliary request 5).

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

V. The following documents are relevant for this decision:

E2: DE 950 602 C1
E5: EP 0 672 781 A1

E8: Schwarz, O et al.,"Kunststoffverarbeitung", Vogel Buchverlag, 8. Auflage (1999), p.237

VI. Claim 1 of the fifth auxiliary request reads:

"A method of making a load bearing member (40;40') for use in an elevator system, characterised by:
roughening at least one surface (46;46') of a polymer jacket (44) that generally surrounds a plurality of tension members (42), said roughening including at least one of:
(i) chemically roughening the surface (46;46');
(ii) mechanically roughening the surface (46;46'), wherein mechanically roughening includes at least one of abrading the one surface (46;46'), rubbing the one surface (46;46') or grinding the one surface (46;46');
(iii) heating localized portions of the one surface (46;46')."

Claim 1 of the sixth auxiliary request comprises options (i) and (iii) of claim 1 according to the fifth auxiliary request, i.e. option (ii) relating to mechanically roughening has been deleted.

Claim 1 of the seventh auxiliary request comprises options (ii) and (iii) of claim 1 according to the fifth auxiliary request, i.e. option (i) relating to chemically roughening has been deleted.

VII. The appellant argued essentially the following:

a) Fifth auxiliary request

Taking E5 as the closest prior art, the subject-matter of claim 1 differed from the method disclosed in this document in that the disclosed "texturing" was

roughening including at least one of:
(i) chemically roughening the surface;
(ii) mechanically roughening the surface, wherein mechanically roughening includes at least one of abrading the one surface, rubbing the one surface or grinding the one surface;
(iii) heating localized portions of the one surface.

The objective technical problem was therefore not, as set out in the decision under appeal, to provide a method which provided a sufficiently high coefficient of friction between the load bearing member and the sheave but rather to provide a method which formed a textured surface which provided a desired frictional value. This took account of the fact a rough surface could sometimes decrease the friction (cf patent [0025]) and that sometimes a degree of slippage was necessary.

The prior art did not contain any pointer to the claimed solutions:

i) Option (i) - chemically roughening

E2 dealt with one specific class of polyurethane materials (i.e. Vulcollan) which were hard and had high wear resistance. Furthermore, E2 addressed the problem of wheels skidding on wet surfaces. This problem did not arise in elevator systems and thus this document would not have been considered by the skilled person when searching for a solution to the objective problem. Moreover the material (Vulcollan) described in E2 was not suitable for use in elevator systems such as described in E5. Furthermore E2 dealt solely with increasing the coefficient of friction so that the skilled person would not view this as being suitable to

solve the problem posed. Thus the first option (i) of chemically roughening involved an inventive step.

ii) Option (ii) - mechanically roughening

Moreover the second option (ii) of mechanically roughening also involved an inventive step. The skilled person would not regard E8 as being relevant because it dealt primarily with methods of smoothing surfaces such as polishing. Even the other finishing methods listed, such as sanding/grinding, were only cited in the context of smoothing the surface. Thus, in seeking to provide a method of roughening, the skilled person would not have considered E8. Thus this option of claim 1 also involved an inventive step.

To summarise, in both the above options, the skilled person could have arrived at the subject-matter of claim 1 but there was no evidence that they would have done so. The subject-matter of claim 1 therefore involved an inventive step.

b) Sixth and seventh auxiliary requests

The above argumentation applied equally to the respective options of the sixth and seventh auxiliary requests which were therefore also allowable.

VIII. The respondent argued essentially the following (note that of the arguments presented during appeal proceedings only those relevant for this decision are summarised here):

a) Fifth auxiliary request

The subject-matter of claim 1 of all requests lacked an

inventive step in view of the teaching of E5 combined with the knowledge of the skilled person as illustrated by E8 or in view of the teaching of E2.

E5 disclosed:

A method of making a load bearing member for use in an elevator system (see claim 1 "Seil als Tragmittel für Aufzüge"), by roughening at least one surface of a polymer jacket (11) that generally surrounds a plurality of tension members (see col. 4, l. 21-23).

The subject-matter of claim 1 therefore differed in that the roughening further included at least one of:
(i) chemically roughening the surface;
(ii) mechanically roughening the surface, wherein mechanically roughening includes at least one of abrading the one surface, rubbing the one surface or grinding the one surface;
(iii) heating localized portions of the one surface.

The problem to be solved was therefore to provide a method wherein the surface friction could be controlled.

Options (i) and (ii) did not involve an inventive step for the following reasons:

i) Option (i) - chemically roughening

Chemically roughening of polyurethane surfaces was taught by E2 which disclosed the use of acids, in particular sulphuric acid, and bases in order to increase the friction coefficient. It would have been obvious for the skilled person to have applied this teaching to that of E5 and thereby arrived at a method

according to option (i) of claim 1.

ii) Option (ii) - mechanically roughening

The skilled person would have been aware from their common general knowledge that mechanical roughening methods e.g. sanding or grinding would texture the surface and thus alter the coefficient of friction. It was also common general knowledge that the degree of roughening depended on the coarseness of the sanding / grinding tool. This was also explicitly disclosed in E8, table 21.1 where methods such as sanding / grinding, dulling and polishing were associated with a change in the surface friction of coefficient. Thus for the skilled person, it would have also have been obvious to use a mechanical roughening method to achieve the texturing taught by E5. The subject-matter of this option of claim 1 therefore did not involve an inventive step.

b) Sixth and seventh auxiliary requests

Since claim 1 of the sixth auxiliary request comprised the subject-matter of option (i) and claim 1 of the seventh auxiliary request comprised that of option (ii), the above argumentation applied directly to these requests which were therefore also not allowable.

Reasons for the Decision

1. Fifth auxiliary request

1.1 E5 is the closest prior art and it is undisputed that this document discloses a method of making a load bearing member for use in an elevator system (see claim 1), the method including roughening at least one surface of a polymer jacket (11) that generally surrounds a plurality of tension members (see col. 4, l. 21-23). The passage col. 4, l. 21-23, discloses that the surface of the load bearing member should be textured, i.e. roughened, but it is not disclosed how the texturing should be obtained.

1.2 The subject-matter of claim 1 therefore differs from the method known from E5 at least in that the roughening includes at least one of:
(i) chemically roughening the surface (46;46');
(ii) mechanically roughening the surface (46;46'), wherein mechanically roughening includes at least one of abrading the one surface (46;46'), rubbing the one surface (46;46') or grinding the one surface (46;46').
This has not been disputed by the parties.

The third option of localised heating forms the basis of the claim found allowable by the opposition division in their decision which has not been appealed by the respondent and therefore this option does not play a role in the current decision.

1.3 The objective technical problem is therefore to provide a method which formed a textured surface providing a desired frictional value.

1.4 The skilled person would therefore look for methods that would allow the textured surface of E5 to be realised.

1.5 Inventive step of option (i)

E2 teaches that the friction coefficient of the surface of a plastic object may be increased by treating the object with an acid or a base (see claim 1 of E2). The skilled person is thus taught that chemical roughening may be used to control the surface roughness.

While it is true that E2 deals with harder materials such as Vulcollan and the problems associated with these materials in wet conditions, the argument that the skilled person would disregard this document is not persuasive. E2 deals with treating the surface of a plastic material in order to increase its roughness. It thus addresses the problem to be solved, i.e. providing a roughened surface, in order to control the coefficient of friction. The skilled person in the field of elevators would moreover realise what degree of roughening was required and apply the chemical treatment accordingly. Thus the teaching of E2 is directly applicable to that of E5 and would therefore have been taken into account by the skilled person.

The skilled person would have therefore applied this teaching to the method of E5 and thereby arrived at the subject-matter of claim 1 (option (i)) without the exercise of inventive activity.

1.6 Inventive step of option (ii)

The skilled person knows from their common general knowledge that mechanical roughening may be used to

control the coefficient of friction of a surface. This is also illustrated by document E8 in table 21.1 where "Schleifen, Mattieren, Polieren" (sanding or grinding, dulling, polishing) are listed as methods of altering the surface friction.

The prior art therefore provides the skilled person with a suggestion to solve the above problem, i.e. using sanding or grinding to control the coefficient of friction of the surface. Hence, it would have been an obvious choice for the skilled person to use one of these methods, i.e. mechanical roughening, in the method known from E5 in order to provide the texturing. The subject-matter of claim 1 (option (ii)) does not therefore involve an inventive step.

It may well be correct, as argued by the appellant, that the methods in E8 may be used to smooth the surface of plastic objects. The skilled person would however know from their common general knowledge that, depending on the coarseness of the sanding/grinding tool, the surface could also be roughened. Thus the teaching of E8 does not teach away from using mechanical roughening but rather suggests it as a means to influence surface friction.

1.7 Hence, the subject-matter of claim 1 does not involve an inventive step.

2. Sixth and seventh auxiliary requests

Claim 1, option (i) of the sixth auxiliary request comprises the same subject-matter as claim 1, option (i) of the fifth auxiliary request. The above conclusion that this subject-matter lacked an inventive step applies equally to this claim.

Claim 1, option (i) of the seventh auxiliary request comprises the same subject-matter as claim 1, option (ii) of the fifth auxiliary request. The above conclusion that this subject-matter lacked an inventive step applies equally to this claim.

Therefore neither the sixth nor the seventh auxiliary requests are allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

C. Moser I. Beckedorf

Decision electronically authenticated