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D E C I S I O N
of 11 March 2003

Case Number: T 0283/99 - 3.3.1

Application Number: 91901641.0

Publication Number: 0461274

IPC: C07C 68/06

Language of the proceedings: EN

Title of invention:
Process for continuously producing aromatic carbonate

Patentee:
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Opponent:
Bayer AG Konzernbereich RP Patente und Lizenzen
Polimeri Europa S.p.A.
GENERAL ELECTRIC COMPANY

Headword:
Aromatic carbonates/ASAHI

Relevant legal provisions:
EPC Art. 123(2)
EPC R. 57a

Keyword:
"Main request: amendment - support in the application as filed (no)"
"First and second auxiliary requests - not admissible"

Decisions cited:
-

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0283/99 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 11 March 2003

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 9 March 1999 revoking European patent No. 0 461 274 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: A. J. Nuss
Members: P. P. Bracke
S. C. Perryman
R. Freimuth

J. P. B. Seitz

Summary of Facts and Submissions

I. The appeal lies from the Opposition Division's decision to revoke European patent No. 0 461 274 due to lack of inventive step.

II. The Appellant (Patentee) during the oral proceedings before the Board, which took place on 11 March 2003, filed as a main request, a set of thirteen claims, and as a first and a second auxiliary request, two sets of claims containing each five claims.

The only independent claim of the main request read

"1. A process for producing methyl phenyl carbonate, diphenyl carbonate or a mixture thereof, which comprises transesterifying a starting material selected from the group consisting of dimethyl carbonate, methyl phenyl carbonate and a mixture thereof with a reactant selected from the group consisting of phenol, methyl phenyl carbonate and a mixture thereof, to thereby produce an aromatic carbonate corresponding to the staring material and the reactant, said aromatic carbonate being methyl phenyl carbonate, diphenyl carbonate or a mixture thereof, and produce methyl alcohol, dimethyl carbonate or a mixture thereof corresponding to the starting material and the reactant as a by-product, characterized in that said starting material and said reactant are continuously fed to a continuous multi-stage distillation column to effect a liquid phase and/or gas-liquid phase transesterification reaction therebetween in the presence of a catalyst in said distillation column, so that the liquid phase of the reaction system in said distillation column flows down while repeatedly experiencing gas-liquid contact with a vapor ascending from a lower portion of the distillation column and

being subjected to reaction, wherein said transesterification reaction is effected while continuously withdrawing a high boiling point reaction mixture containing said aromatic carbonate in a liquid form from a lower portion of the distillation column and continuously withdrawing a low boiling point reaction mixture containing the by-product in a gaseous form from un upper portion of the distillation column by distillation, thereby enabling said aromatic carbonate to be produced continuously, wherein:

a) the reflux ratio of the liquified gaseous component withdrawn from the upper portion of the continuous multi-stage distillation column is in the range of from 0 to 10,

b) the temperature of the inside of the continuous multi-stage distillation column is in the range of from 50 to 350˚C,

c) the average residence time of the liquid phase in the continuous multi-stage distillation column is in the range of from 0.01 to 10 hr, and

d) the amount of the hold-up liquid is in the range of from 0.005 to 0.75 in terms of the volume ratio of the hold-up liquid to the empty continuous multi-stage distillation column."

III. The Respondents (Opponents) objected that the amendments made to the claims, which were filed at a very late stage of the appeal proceedings, were not occasioned by grounds for opposition specified in Article 100 EPC, contrary to the requirement of Rule 57a EPC, and that by the amendments subject-matter extending beyond the content of the application as filed was added, contrary to the requirement of Article 123(2) EPC.

IV. The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request, or of auxiliary request 1 or 2, all submitted at the oral proceedings on 11 March 2003.

The Respondents requested that the appeal be dismissed.

V. At the end of the oral proceedings on 11 March 2003 the decision was pronounced.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request*

2.1 Rule 57 a EPC

The Appellant's submission that the amended claims, according to the main, first or second auxiliary request, were a bona fide attempt to overcome the objections made by Respondent 2 in the letter of 4 November 2002, was contested by the Respondents. In particular, Respondent 2 submitted that the objections made in the letter referred to were not made for the first time in that letter, but that they were indeed in the opposition proceedings since the very beginning, as may be concluded from the notice of opposition filed by Opponent 2 dated 14 March 1995.

The Board would agree with Respondent's 2 submission to the extent that in its notice of opposition the process of Claim 1 as granted was objected to for lack of inventive step over the teaching of several prior art documents and for insufficiency of disclosure. Nowhere

in that notice of opposition, however, was lack of inventive step or insufficiency of disclosure argued to arise due to the broad wording of the claimed process was contested. It was only in its letter of 4 November 2002 that Respondent 2 objected that for the various alkyl and aryl radicals in the starting compounds a multitude of reactants different from dimethylcarbonate as a carbonate and phenol as an aromatic hydroxy compound could be used and that a skilled person would have chosen the reactive distillation technique without feeling himself discouraged by any specific aspects, such as a small equilibrium constant for the specific conversion of dimethylcarbonate and phenol into methyl phenyl carbonate and methanol.

As a consequence of the latter submission in support of the objected lack of inventive step and insufficiency of disclosure, the Appellant restricted the process claim to a process of specifically preparing methyl phenyl carbonate and diphenyl carbonate and introduced the features (a) to (d) relating to specific working conditions of the multi-stage distillation column as now defined in Claim 1.

As the proposed amendments can thus fairly be said to be a genuine attempt at trying to overcome objections made by Respondent 2 in its letter of 4 November 2002, and occasioned by a ground for opposition as specified in Article 100 EPC, the said amendments are admissible under the terms of Rule 57a EPC.

2.2 Article 123(2) EPC

2.2.1 Article 123(2) EPC requires that a European patent may not be amended in such a way that it contains subject-matter which extends beyond the content of the application as filed.

In accordance with the established jurisprudence of the Boards of Appeal, the relevant question to be decided in assessing whether by an amendment subject-matter is added extending beyond the content of the application as filed, is whether the proposed amendments were **directly and unambiguously** derivable from the application as filed.

As the process of present Claim 1 essentially differs from the process of Claim 1 in the application as filed by

(i) the specific process of producing methyl phenyl carbonate, diphenyl carbonate or a mixture thereof from dimethyl carbonate, methyl phenyl carbonate and a mixture thereof or

(ii) the features (a) to (d),

it is thus to be decided whether the combination of the process defined in (i) with the features defined in (ii) was **directly and unambiguously** derivable from the application as filed.

2.2.2 It has not been contested that in the part of the application as filed dealing in a general way with the starting materials, reactants and reaction compounds dimethyl carbonate is disclosed as the most preferred dialkyl carbonate starting material (page 24, lines 3 and 4), that methyl phenyl carbonate is disclosed as the most preferred alkyl aryl carbonate starting material (page 29, lines 19 to 23), that phenol is disclosed as the most preferred aromatic hydroxy compound reactant (page 27, line 25 to page 28, line 3)

and that methyl phenyl carbonate is disclosed as the most preferred alkyl aryl carbonate reactant (page 30, lines 17 to 20) and that, consequently, methyl phenyl carbonate and diphenyl carbonate are implicitly disclosed as the preferred reaction compounds.

2.2.3 On page 44, lines 20 to 22, of the application as filed it is stated that the reflux ratio is generally chosen in the range of from 0 to 20, preferably from 0 to 10. Furthermore, on page 47 of the application as filed it is stated that the amount of the hold-up liquid is in the range of from 0.005 to 0.75 in terms of the volume ratio of the hold-up liquid to the empty continuous multi-stage distillation column (lines 1 to 5); the average residence time of the liquid phase in the continuous multi-stage distillation column is generally in the range of from 0.001 to 50 hr, preferably from 0.01 to 10 hr, more preferably from 0.05 to 2 hr (lines 6 to 13); and the temperature of the inside of the continuous multi-stage distillation column is generally chosen in the range of from 50 to 350˚C, preferably from 100 to 280˚C (lines 14 to 19).

2.2.4 The passages defining the conditions of the continuous multi-stage distillation column referred to in item 2.2.3 herein-above all relate to the generally described process for producing an aromatic carbonate which comprises transesterifying a starting material selected from the group consisting of a dialkyl carbonate of formula R^1OCOR^1, an alkyl aryl carbonate of formula R^2OCOR^2 and a mixture thereof with a reactant selected from the group consisting of an aromatic hydroxy compound of formula Ar^1OH, an alkyl aryl carbonate of formula R^3OCOAr^3 and a mixture thereof, as described on page 13, line 16, to page 15, line 11 of the application as filed.

In this respect, even the Appellant in the oral proceedings of 11 March 2003 was not able to indicate any passage in the application as filed wherein the combination of the specific starting materials, reactants and reaction compounds as now defined in Claim 1 with the features (a) to (d) relating to specific conditions of the multi-stage distillation column was either specifically disclosed or at least directly and unambiguously derivable. Nevertheless, he submitted that such combination directly followed from the examples.

2.2.5 The experimental part of the application as filed, however, is completely silent about the average residence time of the liquid phase in the continuous multi-stage distillation column (feature (c)) and the amount of the hold-up liquid (feature (d)). Furthermore, although in Tables 1 to 5 and 7 the temperature at the column bottom is given, there is no indication of the temperature of the inside of the continuous multi-stage distillation column (feature (b)). The only feature relating to specific working conditions of the multi-stage distillation column cited in the experimental part is the reflux ratio as indicated in Tables 1 to 3, 5 and 7 for the transesterification of dimethylcarbonate with phenol.

Consequently, the combination of the features (a) to (d) as defined in Claim 1 could not be directly and unambiguously derived from the examples, let alone the combination of those features (a) to (d) with the preferred starting materials, reactants and reaction compounds.

2.2.6 Since the combination of those four features (a) to (d) defining the working conditions of the multi-stage distillation column with the preferred starting materials, reactants and reaction compounds was neither

directly and unambiguously derivable from the general disclosure nor from the examples of the description, by these amendments subject-matter extending beyond the content of the application as filed is added, contrary to the requirement of Article 123(2) EPC.

The main request must thus be refused.

3. *First and second auxiliary requests*

Since Claim 1 of both requests contains the very same combination of starting materials, reactants and reaction compounds with the features (a) to (d) defining the working conditions of the multi-stage distillation column as Claim 1 of the main request, those claims are equally amended in such way that subject-matter extending beyond the content of the application as filed is added, contrary to the requirement of Article 123(2) EPC.

As those claims do not meet one of the requirements of the EPC, the first and second auxiliary requests are not admitted into the proceedings.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

N. Maslin A. Nuss