BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS | BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE | CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 19 January 1999

Case Number: T 0910/95 - 3.2.5

Application Number: 90110600.5

Publication Number: 0401739

IPC: D02G 1/12

Language of the proceedings: EN

Title of invention:
Staple fibers and process for making them

Patentee:
E.I. Du Pont De Nemours and Company

Opponent:
Hoechst Aktiengesellschaft

Headword:
-

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
"Novelty (yes), inventive step (yes)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0910/95 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 19 January 1999

Appellant: (Opponent)
Hoechst Aktiengesellschaft
Zentrale Patentabteilung
65926 Frankfurt am Main (DE)

Representative:
-

Respondent: (Proprietor of the patent)
E.I Du Pont De Nemours and Company
1007 Market Street
Wilmington
Delaware 19898 (US)

Representative:
Abitz, Walter, Dr.-Ing.
Patentanwälte Abitz & Partner
Postfach 86 01 09
81628 München (DE)

Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 4 September 1995 rejecting the opposition filed against European patent No. 0 401 739 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: A. Burkhart
Members: H. P. Ostertag
M. Vogel

Summary of Facts and Submissions

I. The appellant (opponent) lodged an appeal against the decision of the Opposition Division rejecting the opposition against the patent No. 0 401 739.

Opposition was filed against the patent as a whole and based on Article 100(a) EPC (lack of novelty and inventive step).

The Opposition Division held that the grounds for opposition mentioned in Article 100(a) EPC did not prejudice the maintenance of the patent unamended, having regard to the following documents:

D1: DE-C-2 908 376,

D2: "Ullmanns Encyklopädie der technischen Chemie", Verlag Chemie, Weinheim/Bergstr., fourth edition 1976, volume 11, page 283,

D3: EP-A-0 250 664 and

D4: EP-A-0 327 867.

II. The appellant (opponent) requested that the decision under appeal be set aside and the patent be revoked.

The respondent (patentee) requested that the appeal be dismissed.

III. Claims 1 and 6 of the patent in suit read as follows:

"A process for making a blend of crimped staple fibres suitable for making permanently antistatic fabrics from a plurality of undrawn, spin-oriented sheath-core filaments having an electrically conductive carbon black core and a sheath of a non-conductive polymer

with a plurality of monocomponent non-conductive filaments, characterized by effectively crimping the sheath-core filaments by

forming a blended tow of the sheath-core and monocomponent filaments,

crimping the blended tow to produce a co-crimped blended tow in which the filaments forming the tow have a uniform crimp frequency in the range of 3 to 6 crimps per centimetre, and

cutting the co-crimped blended tow to form an intimate blend of conductive and non-conductive staple fibres."

"6. A blend of staple fibers suitable for making permanently antistatic fabrics comprising an intimate blend of:

co-crimped staple fibers including crimped mono-component non-conductive staple fibers and from about 1 to about 5 wt.% of crimped un-drawn, spin-oriented sheath-core staple fibers having an electrically conductive carbon black core and a sheath of a non-conductive polymer,

all of said crimped fibers having a crimp frequency in the range of about 3 to 6 crimps per centimeter."

IV. The appellant argued essentially as follows:

The process disclosed in document D4 differed from the process of the patent in suit only in that the fibres having a low tensile strength did not contain an electrically conductive carbon black core. However, since the use of sheath/core fibres with an electrically conductive carbon black core belonged to the permanent knowledge of the person skilled in the art, he would immediately be aware that he could

replace in the fibre blend according to D4 the low-strength fibres by sheath/core fibres having an electrically conductive carbon black core, in order to produce an electrically conductive fibre blend.

Thus, the process according to claim 1 and the fibre blend according to claim 6 were not novel with respect to the disclosure of D4.

The process steps according to claim 1 for making electrically conductive blends of staple fibres by means of co-crimping and co-cutting of a blended tow consisting of conductive and non-conductive filaments, including the recommended crimp frequency and the required amount of conductive fibres, was known from document D1. Moreover, document D3 gave a clear teaching about the chemical composition of high-strength electrically conductive sheath/core filaments. The obvious combination of the teachings of D1 and D3 resulted in the subject-matter of the patent in suit.

V. The respondent argues essentially as follows:

The low-strength fibres used in the process of D4 and the sheath/core fibres used in the process of the patent in suit were different as to their properties and crimping behaviour. Therefore, the person skilled in the art, when studying document D4, would not read in the use of sheath/core filaments of the type used according to the patent in suit, and thus, the subject-matter of the patent in suit was novel with respect to the disclosure of D4.

The joint crimping and cutting of blended tows, which was an important feature of the subject-matter of the patent in suit, was not disclosed in D1. The use of undrawn sheath/core filaments was neither known from D1 nor from D3, the latter document requiring expressly a combined drawing of all filaments.

Therefore, the disclosure of documents D1 and D3 did not lead to the subject-matter of the patent in suit.

Reasons for the Decision

1. *Novelty*

Document D4 discloses a method for producing crimped high tensile modulus filaments, comprising the steps of mixing a plurality of high tensile modulus filaments with a plurality of additional filaments having a low tensile modulus and compression crimping the resultant mixed filaments, and optionally, cutting the mixed filaments into staple fibres (see claim 1 and page 4, lines 39 to 42 of D4).

There can be found no explicit or implicit indication in D4 for the following features of the process according to claim 1 or the fibre blend according to claim 6 of the patent in suit:

- a blend of electrically conductive and non-conductive staple fibres,

- the electrically conductive fibres being undrawn spin-oriented fibres,

- the electrically conductive fibres being sheath/core fibres, wherein

- the core comprises electrically conductive carbon black and the sheath is a non-conductive polymer.

Therefore, the subject-matter of the patent in suit is novel with respect to the disclosure of document D4.

Novelty with respect to documents D1 to D3 was not in dispute.

2. *Inventive step*

2.1 Problem and solution

The problem underlying the invention consists in providing a fibre material which is suitable for making antistatic fabrics which maintain their antistatic properties at a high level (see column 1, lines 13 to 15, and examples 1 and 2 of the patent in suit).

This problem is solved according to the invention of the patent in suit by the process of claim 1 and the fibre blend of claim 6, wherein the invention is defined by the following essential features:

(a) co-crimping of a blended tow of electrically conductive and non-conductive filaments,

(b) thus that the blended tow has a uniform crimp frequency in the range of three to six crimps per cm,

(c) the electrically conductive filaments being undrawn, spin oriented, sheath/core filaments having an electrically conductive carbon black core and a sheath of non-conductive polymer,

(d) the non-conductive filaments being mono-component filaments, and

(e) cutting the co-crimped blended tow into an intimate blend of staple fibres.

2.2 The afore-mentioned invention is not rendered obvious by the prior art documents, for the following reasons:

Document D1 discloses a process for making a blend of crimped conductive and non-conductive staple fibres suitable for making antistatic carpets.

D1 expressly teaches (see claim 1 and drawing) that the electrically conductive fibres should be separately cut from a tow and admixed as individual fibres to the also separately cut electrically non-conductive fibres. This teaching leads the person skilled in the art away from the afore-mentioned features (a) and (e) of the invention of the patent in suit, namely co-crimping and co-cutting of a single blended tow.

The passage in column 4, lines 26 to 36 of document D1, which was referred to by the appellant, relates to the preparation of the electrically conductive staple fibres which is carried out in line with the teaching of D1, in an operation separate from the preparation of the electrically non-conductive fibres. Although in this passage the cutting of a tow consisting of electrically non-conductive and electrically conductive filaments is mentioned, the person skilled in the art is not guided by this passage to form a single blended tow consisting of all respective filaments and to co-crimp and to co-cut this single tow to form the fibre blend. Such a procedure would be contrary to the general teaching of D1.

Moreover, the afore-mentioned feature (c) of the invention is not present in the process of document D1. In fact, the use of sheath/core fibres as electrically conductive fibre material is to be avoided in the process of the D1 (see column 3, lines 10 to 26 of D1).

Document D2 teaches that in mechanical crimping of staple fibres the crimping step should be carried out on the drawn filament tow before the cutting operation. D2 does not relate to the preparation of a blend of electrically conductive and non-conductive fibres and does not disclose any of the afore-mentioned features (a), (b), (c) and (d) of the invention of the patent in suit.

Document D3 discloses a process for making a blended filament yarn suitable for antistatic carpets, which process comprises melt spinning a plurality of non-conductive nylon filaments into a quench chimney, pneumatically introducing spin-oriented electrically conductive sheath-core filaments into the freshly spun thread-line within the quench chimney, consolidating the combined yarn at a puller roll, drawing and co-crimping the combined yarn and winding up the yarn. The sheath-core filaments used in this process have an electrically non-conductive polymer as the sheath component and a polymer containing electrically conductive carbon black as the core component.

D3 requires that the electrically conductive filaments are drawn. D3 does not disclose that the filament yarn is cut into fibres and is silent about the crimp frequency.

Therefore, D3 does not suggest the features of the invention of the patent in suit "the electrically conductive filaments being undrawn" (feature (c)) and the features (b) and (e).

Therefore, even a combined reading of documents D1, D2 and D3 does not lead to the invention claimed in the patent in suit.

Document D4 is a prior art document within the meaning of Article 54(3) EPC, and therefore, is not to be considered when assessing inventive step (see Article 56, second sentence, EPC).

2.3 Hence, both the process according to claim 1 and the blend of staple fibres according to claim 6 involve an inventive step within the meaning of Article 56 EPC.

3. For the above reasons, the subject-matter of the independent claims 1 and 6 constitutes a patentable invention within the meaning of Article 52(1) EPC.

The same applies to the subject-matter of dependent claims 2 to 5, 7 and 8 concerning further embodiments of the subject-matter of independent claims 1 and 6.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Townend A. Burkhart