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 10/90 - 3.2.5

Application No.: 80 304 187.0

Publication No.: 0 052 678

Title of invention: A process for manufacturing a textured multifilament yarn having alternating twists

Classification: D02G 1/02

D E C I S I O N
of 30 July 1992

Proprietor of the patent: Toray Industries, Inc.

Opponents: Hoechst AG
Akzo Faser AG
Rhodia AG

Headword:

EPC Art. 56

Keyword: "Inventive step (denied)"

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number : T 10/90 - 3.2.5

D E C I S I O N
of the Technical Board of Appeal 3.2.5
of 30 July 1992

Appellant : (Opponent III)
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Respondent : (Proprietor of the patent)
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Representative :
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Decision under appeal :
Decision of Opposition Division of the European Patent Office of 5 October 1989, posted on 23 November 1989, rejecting the opposition filed against European patent No. 0 052 678 pursuant to Article 102(2) EPC.

Composition of the Board :

Chairman : C.V. Payraudeau
Members : M.H.M. Liscourt
J.H. Seidenschwarz

Summary of Facts and Submissions

I. The Appellant and two other parties filed oppositions against the European patent No. EP-B-0 052 678.

II. The Opposition Division rejected the oppositions and maintained the patent in an unamended form, considering that the invention was disclosed in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art (Art.100(b) EPC) and that the process which is the subject matter of the claims was novel and inventive in view of the cited prior art (Art.100(a)).

III. The Appellant (Opponent III) appealed from this decision contending in his ground of appeal as before the Opposition Division that the invention was insufficiently disclosed because it was not clear at what temperature the "natural draw ratio" was determined, that the subject-matter of Claim 1 as well as that of Claims 4, 9 and 17 was not novel in view of the document DE-A-2 831 868 (D1) and that the subject-matter of Claims 1 to 17 was in any case not inventive in view of document D1 when considering the teachings of the documents DE-A-2 227 858 (D2) and DE-A 2 327 434 (D4) already cited in the opposition proceedings.

The Appellant also cited in support of his argumentation the following documents:

Koch-Satlow, Großes Textil-Lexikon, p. 738, Deutsche Verlag-Anstalt Stuttgart, 1965 (D3);

Ludewig, Polyesterfasern, Akademieverlag, 1975, Extract 5.4 "Fadenbildung unterhalb der Düse" (from p. 255) and Extract 6 "Verstreckung von Polyesterspinnfäden" (from p. 320) (D5).

IV. The Respondent (Patentee) challenged this opinion and cited the following further documents:

"The Textile Institute Manual of Textile Technology"
"Strength and Elongation Testing of Single and Ply Yarns: Experience with USTER Tensile Testing Installations; R. Furter (D6);
and
"Physical Properties of textile Fibres" by Morton and Hearle Heinemann: London, p. 274-279 (D7).

The Patentee also filed samples of materials knitted according to the process of the patent and according to the process described in document D1.

V. Oral proceedings were held on 30 July 1992 at the end of which the Appellant requested that the decision under appeal be set aside and the patent be revoked and the Respondent requested that the appeal be rejected (main request) or that the decision under appeal be set aside and the patent be maintained in an amended form on the basis of one of the three auxiliary requests filed by the Respondent with a letter dated 24 August 1989.

The other parties duly summoned, did not appear, having previously informed the Board of appeal that they would not be represented at the oral proceedings.

(i). The independent claims according to the requests of the Respondent read as follows:

Main request:

"A process for manufacturing alternatingly twisted yarn wherein a thermoplastic synthetic multifilament yarn is

subjected to false twisting and heat setting to give in undetwisted portions of the yarn a twist density of at least 17500 $\sqrt{\rho/D}$ turns/m wherein ρ is the specific gravity of the yarn and D is its denier number, characterised in that the false twisting is performed along a substantially stationary path using a friction-type false twisting device to substantially avoid ballooning, the yarn is subjected to the false twisting and heat setting under a draw ratio equal to or less than the natural draw ratio and that a yarn contacting member is disposed at a location downstream of the false twisting device whereby a front end of false twisted region in the yarn is prevented from being transmitted across the yarn contacting member, and an overdetwisted portion is generated in the yarn located between the false twisting device and the yarn contacting member.",

followed by Claims 2 to 17.

Auxiliary request 1:

"A process for manufacturing alternatingly twisted yarn wherein a thermoplastic synthetic multifilament yarn is subjected to false twisting and heat setting to give undetwisted portions of the yarn a twist density of at least 17500 $\sqrt{\rho/D}$ turns/m wherein ρ is the specific gravity and D is the denier number of the yarn, characterised in that the false twisting is performed along a substantially stationary path using a friction type false twisting device to substantially avoid ballooning, the yarn being subjected to the false twisting and heat setting under a draw ratio equal to or less than the natural draw ratio, and that a yarn contacting member is disposed at a location downstream of the false twisting device at a distance L therefrom such that substantially all the front ends of the false twist imparted regions

reach the yarn contacting member before an overdetwisted portion is generated in the yarn between the false twisting device and the yarn contacting member, transmission of such front ends are prevented by the yarn contacting member, and only then an overdetwisted portion is generated in the yarn at a point between the false twisting device and the yarn contacting member.",

followed by Claims 2 to 15 (former Claims 10 and 11 of the granted patent being deleted).

Auxiliary request 2:

"A process for manufacturing alternatingly twisted yarn wherein a thermoplastic synthetic multifilament yarn is subjected to false twisting and heat setting to give in undetwisted portions of the yarn a twist density of at least $17500\sqrt{\rho/D}$ turns/m wherein ρ is the specific gravity of the yarn and D is its denier number, characterised in that the false twisting is performed along a substantially stationary path using a friction-type false twisting device to substantially avoid ballooning, the yarn is subjected to the false twisting and heat setting under a draw ratio equal to or less than the natural draw ratio and that a yarn contacting member is disposed at a location downstream of the false twisting device whereby a front end of false twisted region in the yarn is prevented from being transmitted across the yarn contacting member, and an overdetwisted portion is generated in the yarn located between the false twisting device and the yarn contacting member to give a yarn wherein the ratio of the lengths of the undetwisted portions to the entire length of the yarn is at least 10% and the sum of the squares of the lengths (in mm) of the undetwisted portions is at least 3000 per meter length of the yarn.",

followed by a new Claim 2 and Claims 3 to 16 corresponding to granted Claims 3 to 17 without Claim 10.

Auxiliary request 3:

"A process for manufacturing alternatingly twisted yarn wherein a thermoplastic synthetic multifilament yarn is subjected to false twisting and heat setting to give undetwisted portions of the yarn a twist density of at least 17500 $\sqrt{\rho/D}$ turns/m wherein ρ is the specific gravity and D is the denier number of the yarn, characterised in that the false twisting is performed along a substantially stationary path using a friction type false twisting device to substantially avoid ballooning, the yarn being subjected to the false twisting and heat setting under a draw ratio equal to or less than the natural draw ratio, and that a yarn contacting member is disposed at a location downstream of the false twisting device at a distance L therefrom such that substantially all the front ends of the false twist imparted regions reach the yarn contacting member before an overdetwisted portion is generated in the yarn between the false twisting device and the yarn contacting member, transmission of such front ends are prevented by the yarn contacting member, and only then an overdetwisted portion is generated in the yarn at a point between the false twisting device and the yarn contacting member, to give a yarn wherein the ratio of the lengths of the undetwisted portions to the entire length of the yarn is at least 10% and the sum of the squares of the lengths (in mm) of the undetwisted portions is at least 3000 per meter length of the yarn.",

followed by Claims 2 to 14 corresponding to Claims 3 to 17 of the granted patent without Claims 10 and 11.

(ii). During the oral proceedings, the Appellant withdrew his objection that the invention was insufficiently disclosed and essentially submitted in support of his request that the subject-matter of Claim 1 of the main request of the Respondent was not novel or at least not inventive in view of document D1 which disclosed all the claimed features.

(iii). According to the decision under appeal, the only difference between the process of document D1 (which, as agreed by the parties, represents the closest prior art) and the process of Claim 1 resides in that document D1 uses in its examples a spindle-type false twisting device whereas according to Claim 1 of the patent in suit it is essential to use a friction-type false twisting device. However, document D1 mentions (p. 8 third paragraph) that equally good results may be obtained with friction-type false twisting devices.

The Opposition Division had held that the document D1 did not teach that the false twisting should be performed along a substantially stationary path and that a yarn contacting member should be disposed at a location downstream of the friction-type false twisting region.

According to the opinion of the Opposition Division, it was necessary to induce ballooning in order to obtain a yarn according to figure 1 of document D1. Therefore, although it was admitted that no ballooning was produced when a friction-type false twisting device was used, the skilled technician would have modified such a device in order to produce the necessary ballooning.

(vi). The Appellant contested this opinion and submitted that the yarn contacting member was wrongly considered as a new

feature in Claim 1 of the patent in suit since it could be, according to the description of the patent itself(p. 8, lines 28, 29), nothing else other than the usual first delivery roller. This feature was already present in the device of document D1 (cf. in Fig. 1 the roller designated by the reference 6).

As regards the argument that the man skilled in the art would modify the friction-type false twisting device so as to artificially induce ballooning, there was no support in the description of document D1 for such an interpretation and the man skilled in the art, when following the teaching of document D1 would automatically obtain a yarn corresponding to the yarn obtained by the process of the Claim 1 of the patent in suit.

(v). The Respondent submitted in support of the patentability of the subject-matter of Claim 1 of the patent in suit that the process of the invention was essentially characterised in that the false twisting step was performed along a substantially stationary path. To this end, it was necessary to use a friction-type false twisting device together with a yarn contacting member but this did not mean that one would automatically obtain the yarn of the invention when using a false twisting device together with the usual delivery roller. The man skilled in the art looking at the teaching of the document D1 even if it is admitted that he could have tried using a friction-type false twisting device would have chosen the parameters of the process so as to obtain a ballooning which was necessary to produce the yarn disclosed in this document.

The process disclosed in Claim 1 was therefore novel and inventive because the prior art and in particular the document D1 did not give any hint that by preventing

ballooning one could obtain a yarn such as produced by the process of the invention.

Reasons for the Decision

1. Insufficiency of disclosure

It results from the documents D6 and D7 that the "natural draw ratio" is a well known parameter which can be easily determined. Therefore the patent in suit discloses the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. Since the Appellant withdrew his objections based on this ground during the oral proceedings before the Board of Appeal, there is no need to pursue the matter further.

2. Novelty

2.1 Document D1 discloses a process for manufacturing alternatingly twisted yarn as specified in the precharacterising portion of the claim, which process is actually the closest prior art. According to this process

- the false twisting is performed by using a spingle-type false twisting device, which can be replaced by a friction-type false twisting device (cf. page 8, paragraph 3);

- the yarn is subjected to the false twisting and heat setting under a draw ratio equal to or less than the natural draw ratio (compare document D1: example 1, 1:1.1; example 2, 1:2.0; example 3, 1:1.82, with the patent in suit, example 1, 1:1.4), and

- first delivery rollers are disposed at a location downstream of the false twisting device (cf. Fig. 1)

which delivera rollers can stop the front end of the false twist imparted regions acting therefore as a yarn contacting member in the process as it is expressis verbis mentioned in the description of the patent in suit (cf. in particular EP-B-0 052 678: page 8, lines 17 to 19).

2.2 No detail is given in document D1 as to the manner in which the false twisting should be performed when a friction-type false twisting device is used. Since the parameters of the process of D1 using a friction-type false twisting device may be adjusted so as to produce ballooning, as explained in the decision under appeal, the feature that "the false twisting is performed along a stationary path to substantially avoid ballooning" is not revealed by document D1.

2.3 Documents D2, D3 and D5 have only been cited to show the general knowledge of the skilled person at the date of priority of the patent in suit and do not reveal any of the characterising features of Claim 1 of this patent whereas document D4 has only been cited with respect to the dependent Claims 6 to 8.

Consequently, the subject-matter of Claim 1 according to the main request of the Respondent is novel (Article 54 EPC).

3. Inventive step

3.1 As indicated above the only difference between the process disclosed in D1 and the process which is the subject-matter of Claim 1 according to the main request of the Respondent resides in that the step of performing the false twisting along a substantially stationary path to substantially avoid ballooning is not specifically

mentioned in document D1 and not necessarily obtained when following the teaching of this document. However, the man skilled in the art knows that one characterising feature of the friction-type twisting device is that it prevents ballooning unless special measures are taken to produce it. Since document D1 does not give any instruction about producing or avoiding ballooning, there is no doubt that the man skilled in the art when using a friction-type twisting device will be in a position to carry out the step of performing the false twisting along a substantially stationary path to avoid ballooning without having to exert any inventive ingenuity. He will then obtain a yarn different from the one shown in figure 1 of document D1. However, the teaching of document D1, which relates to a manufacturing process, cannot be considered as been strictly limited to the production of the preferred yarn disclosed but also covers the production of other yarns which the man skilled in the art will obtain when reproducing the process.

3.2 For the reason given above, the subject-matter of Claim 1 according to the main request of the Respondent does not involve an inventive step (Art.56 EPC).

4. First auxiliary request

4.1 Claim 1 of this request differs from Claim 1 of the main request in that the distance L, between the false twisting device and the contacting member, is such that **all** the front ends of the false twist imparted regions reach the yarn contacting member before an overdetwisted portion is generated and that **only** an overdetwisted portion is generated in the yarn at a point between the false twisting device and the yarn contacting member.

4.2 As the patent specification does not give any information how this desired result is to be obtained, it has to be concluded that such a measure belongs to the normal routine work of the man skilled in the art and therefore no inventive step can be recognised in the process according to claim 1 of the auxiliary request (Art.56 EPC).

5. Second auxiliary request

5.1 Claim 1 of the second auxiliary request corresponds to Claim 1 of the main request with added features relating to the yarn obtained by the process steps.

5.2 The introduction in the process claim of features of the product obtained by the process can only be considered as meaning that the process is so conducted that the said product is obtained. It has not been asserted that these features characterising the yarn were in themselves new and inventive but only that they were advantageous. As the way and means necessary to produce such a yarn are not disclosed in the specification of the patent in suit, it is to be assumed that the man skilled in the art will have no difficulty to produce such a yarn only with the help of his normal technical knowledge. Therefore, the subject-matter of Claim 1 of the second auxiliary request does not involve an inventive step.

6. Third auxiliary request

6.1 Claim 1 of the third auxiliary request comprises in combination all the features of Claim 1 of the main request together with the added features of Claim 1 of the first auxiliary request and of Claim 1 of the second auxiliary request.

6.2 As said features which are in themselves not inventive (see point 5 and 6 above) are totally independent and do not bring about any synergetic effect, their combination cannot be considered as inventive in itself. Therefore, the subject-matter of Claim 1 of the third auxiliary request lacks also an inventive step (Art.56).

7. Dependent claims

Dependent claims of all the requests must fall with the corresponding Claim 1 since each request must be considered as a whole.

8. Consequently all the requests of the Respondent must be rejected.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside;

2. The European patent No. 0 052 678 is revoked.

The Registrar: The Chairman:

A. Townend C.V.Payraudeau