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Aktenzeichen / Case Number / N° du recours : T 189/88 - 3.2.1

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Bezeichnung der Erfindung: Polyester fiber dyeable under normal pressure and
Title of invention: process for the production thereof
Titre de l'invention :

Klassifikation / Classification / Classement : D01D 5/12
D01F 6/62

ENTSCHEIDUNG / DECISION

vom / of / du 15 December 1989

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /
Titulaire du brevet :

Asahi Kasei Kogyo Kabushiki Kaisha

Einsprechender / Opponent / Opposant :

01 CARL FREUDENBERG
02 HOECHST AG
03 RHONE POULENC FIBRES

Stichwort / Headword / Référence :

EPO / EPC / CBE Articles 54 and 56 EPC

Schlagwort / Keyword / Mot clé :

"Novelty and inventive step of the product
(yes)" -
"Inventive step of the process (no)" -
"Independent claims for product and process"

Leitsatz / Headnote / Sommaire

Europäisches
Patentamt

Beschwerdekammern

European Patent
Office

Boards of Appeal

Office européen
des brevets

Chambres de recours



Case Number : T 189/88 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 15 December 1989

Appellant I : HOECHST AKTIENGESELLSCHAFT, Frankfurt
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Decision under appeal : Interlocutory decision of the Opposition Division of
the European Patent Office dated 28 March 1988
concerning maintenance of European patent
No. 0 056 963 in amended form.

Composition of the Board :

Chairman : F. Gumbel
Members : M. Liscourt
 W. Moser

Summary of Facts and Submissions

- I. European patent application No. 81 301 707.6, which had been filed on 16 January 1982, claiming priority from two Japanese applications filed on 19 January 1981 and 9 February 1981, was granted as European patent No. 0 056 963 on 17 April 1985.
- II. Notices of opposition were filed requesting the complete revocation of the patent on the grounds that the subject-matter of the patent was not patentable within the meaning of Articles 52 to 57 EPC.

During opposition procedure, the following documents were cited:

- (1) US-A-3 362 859
- (2) DE-A-2 347 801
- (3) US-A-2 604 667
- (4) US-A-4 134 882
- (5) US-A-4 195 051
- (6) DE-A-1 435 512
- (7) Derwent Reference Number 56926X/30
- (8) JP-A-13156/1960
- (9) CA 94:141106s
- (10) DE-A-1 660 489
- (11) DE-B-2 618 406
- (12) Sen-I Gakkaishi 33 p. T208-T214 5/1977
- (13) Conférence G. Perez - C. LECLUSE -
"International Man-made fibre conference" à
Dornbirn (Autriche) 20-22/06/1979
- (14) Sen-I Gakkaishi 34 p. T93-T98 3/1978
- (15) DUMBLETON J.H. et al.,
J. APPLIED POLYMER SCIENCE 12 2491-2492, 2503-2508,
1968

- (16) MURAYAMA T. "Dynamic mechanical analysis of polymeric material" - Elsevier Scientif. Pub. Co. 1978, pages 71-81
- (17) Derwent Abstract 62 864 A 135
- (18) FR-A-2 045 331
- (19) US-A-3 611 485
- (20) J. Polym. Science, Part C, No. 16, Page 4081 (1968).

- III. In an interlocutory decision posted on 28 March 1988, the Opposition Division maintained the European patent in amended form.
- IV. Appellants I and II (Opponents (02) and (03)) filed appeals on 3 May 1988 and 27 May 1988 respectively and paid the appeal fees on the same dates. Statements setting out the grounds of appeal were filed on 6 August 1988 and 4 July 1988, respectively.

In the appeal of Appellant I, it is argued that the description is not clear enough to allow the man skilled in the art to carry out the invention and particularly the claimed process, and that examples 1-5, which are supposed to represent the claimed process, are known from document (4) and that the process according to Claim 7 is not inventive when combining the teaching of one of the documents (6) to (9) with the teaching of one of the documents (10) and (11).

Appellant II submitted that the product according to Claim 1 is not patentable for lack of inventive step in relation to documents (12) and (4) or document FR-A-1 313 873 or FR-A-2 400 574, which latter documents were cited for the first time in these grounds, and that the process according to Claim 7 lacks novelty having regard to document (18) or lacks inventive step in relation to the combination of documents (4) and (18) and FR A-2 400 574.

- V. The Respondent (proprietor of the patent in suit) expressed his position in a letter received on 11 April 1989.

In the Respondent's view, the appeal of Appellant II should not be considered admissible in the light of decision T 244/85 (OJ EPO 1988, page 216) since he had not filed any objection within the one month term according to Rule 58(4) EPC and was, therefore, not adversely affected. Besides, the Respondent objected to the arguments set forth by the Appellants and requested that their appeals be dismissed and, as an auxiliary motion, that oral proceedings be held.

- VI. On 10 August 1989, the Board summoned the parties to oral proceedings.
- VII. In preparation for said proceedings, on 22 November 1989 the Respondent filed observations, an amended description and a new process Claim 7 referring now to Claim 1 as granted for a product so that the valid Claims 1 and 7 read now as follows:

Claim 1:

"A fiber consisting essentially of polyethylene terephthalate and having an initial modulus of more than 44 cN/dtex, a peak temperature (T_{max}) at peak of dynamic mechanical loss tangent ($\tan \delta$) measured with a frequency of 110 Hz of 85°C to 110°C, a peak value of the dynamic mechanical loss tangent ($(\tan \delta)_{max}$) of 0.115 to 0.135, and a local average refractive index distributed symmetrically around the center of the cross section of the fiber."

There follow five Claims 2 to 6 of the same category and appendant to Claim 1.

Claim 7:

"A process for producing fibers according to Claims 1-6 comprising a melt of said polyethyleneterephthalate, passing the extruded filaments through a heating zone provided at the surface of the nozzle and having a length of at least 5 cm and a temperature of 150°C to the melting point of the polyethyleneterephthalate, applying the vacuum with an aspirator located below the heating zone, whereby the air is supplied from the circumferential direction of the filaments and in the direction parallel to the running filaments, and then winding the filaments at a winding speed of at least 7000 m/min."

There follow three claims numbered 8 to 10 of the same category referring to Claim 7.

VIII. At the oral proceedings held on 15 December 1989, only Appellant I took part.

It was at first clarified that, according to the decision G 1/88 (OJ EPO 1989, 189), the appeal of Appellant II was admissible regardless of the fact that he omitted to file any objection within the time limit according to Rule 58(4) EPC.

Appellant I maintained his views according to which the product of Claim 1 is characterised by unusual - but known - parameters and the process according to Claim 7 is not novel inter alia on the basis of document (4). Consequently, the product according to Claims 1 to 6 obtained by that process must also lack novelty.

The Respondent challenged this opinion and requested that the appeal be dismissed and the patent be maintained on the basis of the following documents:

Main request: claims filed on 22 November 1989, pages 2, 4, 6-16 of the description underlying the impugned decision; pages 3, 5, 17 filed on 22 November 1989; drawings as granted.

Auxiliary request: claims and description as submitted during oral proceedings; drawings as granted.

Appellant I requested that the decision under appeal be set aside and the patent be revoked.

Reasons for the Decision

1. The appeals comply with Articles 106 to 108 and Rule 64 EPC; they are admissible.
2. As regards independent Claim 1 for a product, it has been criticised by Appellant I on two aspects:
 - the product is defined in said claim by unusual parameters rendering its scope unclear,
 - the product according to Claim 1 cannot be inventive because it is obtained by performing a process which is not novel.

- 2.1 Concerning the objection of lack of clarity of Claim 1, the parameters which are used for characterising the fibres in respect of their dyeability are not totally unusual as follows from documents (4), (5) and (15). Moreover, these values and their ways of measurement are clearly described in the patent specification and it has been shown that it was possible to convert the given values in order to obtain values which can be compared with the usual parameters so that this claim satisfies the requirements of Article 84 EPC. The same is true as regards Claims 2 to 6.
- 2.2 Novelty and inventive step in the product of Claim 1 have not been objected per se by Appellant I, but only as the result of the process according to Claim 7. Therefore, it has to be considered at first whether said process is novel and inventive.
3. As regards patentability of the process according to Claim 7, the following is observed:
- 3.1 Among the numerous documents cited, no one shows all the features which characterise the process of Claim 7. The subject-matter of said claim is therefore novel. The objection of lack of novelty raised by Appellant I is based on the opinion that the heating zone of the patent and the heat protection tube mentioned in document (4) are equivalent and that a skilled man would immediately imply the use of an aspirator when reading this document. This interpretation, however, clearly exceeds the disclosure of document (4) and cannot, therefore, be accepted by the Board.

On the other hand, document (18), referred to by Appellant II when contesting novelty of the process of Claim 7, does not disclose the claimed heating temperature and a winding-up step. It is not related to the improvement of dyeability.

- 3.2 The purpose of the present invention consists in making PET fibres which can be dyed through a normal dyeing process (at atmospheric pressure).

The man skilled in the art faced with this problem could see in document (4) (column 3, lines 35 to 42) that it was possible to obtain PET fibres showing excellent "dye at the boil capability" if such filaments are spun using high withdrawal speeds (above about 5,000 meters/minute).

In said document, it was also mentioned (column 3, lines 60 to 63) that other useful characteristics are obtained when the yarns are produced at speeds above 6,000 meters/minute.

In a further passage (column 4, lines 5 to 32) of the same document, it was explained that it had been found that at high spinning speeds better filaments can be obtained more reliably by controlling the spinning and cooling conditions in order to minimise the difference between the birefringence of the surface and the birefringence of the core of the filament in the as-spun filaments. The only upper limit which is possible is said to be imposed by the apparatus which would not allow higher wind-up speeds than 7300 m/min (see column 7, lines 33 to 42).

- 3.3 The skilled person hence knew that it was suitable to increase the speed and he also was aware that the air flow under the spinneret could have a great influence on the spinning conditions as well as on the fibres produced (see

document (4), column 21, lines 30 to 41). Furthermore, he is taught by this document that cooling air may preferably be introduced symmetrically to the filaments (see column 17, lines 37/38) and that at extremely high speeds the cooling of the filaments emerging from the spinneret should be delayed, which can be achieved by a hollow protection tube surrounding the emerging filaments (see column 21, lines 39 to 46). He was, therefore, encouraged to try in this direction to obtain filaments with better properties.

- 3.4 In this context, document (18) (see Figure 5 and page 11, lines 25 to 34) discloses a device for spinning polyester fibres at extremely high speeds wherein means for applying hot air are disposed below the spinneret so that a vacuum is applied (through hole 80), whereby the air is supplied from the circumferential direction of the filaments (see in Figure 5 the holes located at the periphery of the chamber 48) and in the direction parallel to the running filaments. By making use of such teachings in the case of document (4), the man skilled in the art would arrive at a process showing all the features of Claim 7 and would not obtain any result going beyond what the two mentioned documents could have let him expect, that is to say fibres with good "dye at the boil" properties. Hence, the Board takes the view that the skilled person did not need the exercise of inventive skills to find the process specified in Claim 7.

- 3.5 During the appeal proceedings, the Respondent has developed a certain number of arguments which are individually considered in the following.

- 3.5.1 It was argued that in document (4), the air is blown circumferentially in a cross-wise direction instead of being blown tangentially and in a direction parallel to the fibres as in the process of Claim 1.

It is observed that in Claim 7 the air is also said to be supplied from the circumferential direction of the filaments, and nothing is said about a tangential supply, the air being simultaneously or successively directed parallel to the direction of the running filaments. According to document (4) (column 17, lines 37 to 40), the air is also introduced through the foraminous tubes symmetrically around the filaments and it cannot, therefore, be seen that said air is supplied in a totally different manner.

- 3.5.2 As regards the influence of the heating zone on the process, the temperature of which is between 150°C and the melting point of the melted PET, it can only fulfil a function of retarding the cooling, as the protection tube and the foraminous tubes of the device described in document (4) also do, except that said function is fulfilled to a different extent.
- 3.5.3 According to the Respondent, none of the cited documents describes a process which could lead to a product showing the same properties as those obtained by the process of Claim 7. This is not contested by the Board, however this argument would prove novelty rather than inventive step and cannot, therefore, be taken into account for appreciating inventive step with the subject-matter of Claim 7.
- 3.5.4 It was further argued that in the process according to document (4), there would be a delayed cooling, while in the process of Claim 7 there would be a positive heating of the fibre in the heating zone.

As already dealt with under point 3.5.2 above, given the fact that the temperature of said "heating zone" is less than the temperature of the filaments passing through it, it cannot be agreed that the fibres are subjected to a positive heating in said zone, although heat may be actively applied in this zone. In both cases, the effect achieved is a delayed cooling of the filaments.

- 3.5.5 It is agreed that the process disclosed in document (18) is used for producing non-woven fabric, that is to say that the filaments are not wound after cooling, but the skilled person is able to recognise that the teaching of a document about spinning fibres can be used, whatever the treatment may be to which the fibres are submitted afterwards.
- 3.5.6 As regards the difference between the vacuum provided by the aspirator of the present invention and the effect provided by the device according to document (18), which has been underlined by the Respondent, the device which is described in the patent in suit is of the venturi type and provides for an air current which is parallel to the extruded filaments, while the device of document (18) is a chamber fed with pressed air so that it generates in the hole, through which the filaments are pulled out, an air current which is also parallel to the direction of the filaments, so that no difference can be recognised in the effect provided by each of these devices. The argument according to which the difference in treatment would result in a substantial difference in aspect of the outer surface of the filaments, cannot be taken in favour of Claim 7 because no specific feature appears in Claim 7

which would produce the quick cooling which has been said to be at the origin of the surface micro-structure of the filaments leading to special dye properties.

4. For the above reasons, the Board comes to the conclusion that the process of Claim 7 could be derived in an obvious manner by a skilled man from the available prior art. This claim, therefore, does not meet the requirements of Articles 52(1) and 56 EPC.

Hence, Claim 7 cannot be maintained and the main request must be rejected.

5. The fact that the present Claim 7 - in contrast to the granted version of Claim 7 - comprises a reference to Claims 1 to 6 relating to the product, does not lead, in the present case, to a different assessment as regards the presence of an inventive step in the process according to Claim 7.

Firstly, in spite of this reference to previous claims, Claim 7 cannot be construed as being a dependent claim within the terms of Rule 29(3) and (4) EPC. It follows from logical considerations that a process cannot be a further embodiment of a specific product claimed in the previous claims.

On the other hand, it cannot be duly said, in the present case, that, via the reference to the previous claims, additional aspects concerning the process of production are introduced into Claim 7 by implication. The specific physical parameters used for characterising the fibres of Claims 1 to 6 do not provide any indication as to measures for obtaining them, nor do they give a hint to the use of a specific composition of the polyester-material to be spun.

There may be cases where the patentability of a process immediately follows from that of the product produced by this process and, therefore, needs not be examined separately, as it is outlined under C-III, 3.7a of the Guidelines for Examination. This can, however, in the Board's view, only be true in cases where the process has been specially adapted to the manufacture of this product in order to comprise all the features which are necessary to ensure that the claimed process results inevitably in the product claimed in the claims referred to. In the present case, the Board is not convinced that the above requirement is met. Considering that the measures indicated in Claim 7 are somewhat vague and the claimed ranges are very broad, it appears that present Claim 7 does not sufficiently disclose the process resulting in the very product of Claim 1. During the oral proceedings, the Respondent did not succeed in substantiating his view according to which there is sufficient interrelationship between the process of Claim 7 and the specific fibre claimed in Claim 1. His interpretation that this was in particular due to the different way of applying the cooling air could not be accepted by the Board, since no fundamental difference could be seen (cf. points 3.5.1 and 3.5.6 above), taking into account that the use of an aspirator cannot be held responsible for the obtainment of the fibre of the invention, as follows from Examples 1 to 3 of the patent in suit, which are said to represent the invention, although no aspirator is used.

On the other hand, the Board has no doubts that the patent as a whole contains sufficient disclosure to enable the skilled person to arrive at the claimed product. In the absence of objections by the Appellants regarding sufficiency, no further substantiation of this issue appears to be necessary.

6. As regards the auxiliary request, based on the granted product-claims 1 to 6 solely, the following is observed:
- 6.1 The fact that the subject-matter of Claim 7 lacks inventiveness does not per se exclude the patentability of product Claims 1 to 6. In fact, Claim 7 represents an independent claim for a process not specially adapted for the manufacture of the claimed product (see point 5 above) within the meaning of Rule 30(a) or (c) EPC. Thus, there is no necessary connection between the patentability of the product per se and the way it can be manufactured (cf. T 01/81 "Thermoplastische Muffen", OJ EPO 1981, 439, point 4). Therefore, the patentability of Claims 1 to 6 has basically to be assessed separately (cf. Pagenberg, Münchner Gemeinschaftskommentar, 5. Lieferung, Erfinderische Tätigkeit, Art. 56, Rdn. 12, 14).
- 6.2 Concerning formal aspects of Claims 1 to 6 relating to clarity and sufficient disclosure, reference is made to point 2.1 above. Moreover, since Claims 1 to 6 are identical with original and granted Claims 1 to 6, there is no objection under Article 123(2) and (3) EPC.
- 6.3 Appellant I has contested patentability of Claim 1 solely on the ground that since the process of Claim 7 is not novel and inventive, the same must be true for the product according to Claim 1 achieved by said process.

This approach could, in the Board's judgement, only be successful on two conditions, namely that the process of Claim 7 could have been shown to be known and, secondly, that the process of Claim 7 immediately and inevitably results in the product of Claim 1. Both conditions are not satisfied, as has been shown under points 3.1 and 5 above. Consequently, the approach of Appellant I is not suited to put into question novelty and inventive step of the subject-matter of Claim 1.

- 6.4 Appellant II, in his written statement dated 29 June 1988, has based his objection against patentability of the product of Claim 1 on documents (4), (12), (21), (22) and (23). As can be seen from the arguments put forward by Appellant II and as follows immediately from the comparison of the subject-matter of Claim 1 with the prior art fibres disclosed in these documents, novelty of the claimed fibre cannot be questioned.
- 6.5 As regards inventive step, Appellant II has not shown why a skilled person would have combined the aspects referred to in the different documents, such as high initial modulus, influence of peak temperature (T_{max}) at peak of dynamic mechanical loss tangent, the latter being also within a certain range, and symmetrical distribution of refractive index in order to arrive at a polyester fibre with improved dyeability at atmospheric pressure.

Moreover, even in combining all these aspects, the skilled person would not arrive at the specific values or ranges for the parameters specified in Claim 1. The $T_{E''max}$ -value referred to in document (4), column 14, last paragraph to column 15, line 1, is said to be 115°C or, preferably, 110 to 112°C and thus cannot be truly said to lie within the claimed range of 85°C to 110°C. Moreover, it appears that $T_{E''max}$ mentioned in document (4) relates to the temperature where the dynamic loss modulus E'' reaches its maximum whilst T_{max} as claimed refers to the temperature where the dynamic loss tangent ($\tan \delta$) has its maximum. There is also no reference in document (4) to the frequency of 110 Hz mentioned in Claim 1.

Concerning the initial modulus, the general teaching that this modulus should be higher than 44 cN/dtex cannot be derived from documents (12) and (4), although some values disclosed in these documents may fulfil this condition. As regards the claimed range of peak value of the dynamic

mechanical loss tangent, there is no disclosure in any of the documents.

- 6.6 Under these circumstances, the objections raised against inventive step of the subject-matter of Claim 1 are not considered to be substantial. Hence, the Board concludes that the product according to Claim 1 is patentable and Claim 1 should be maintained.

The same applies to dependent Claims 2 to 6, which relate to further embodiments of the product specified in Claim 1.

Order

For these reasons, it is decided that:

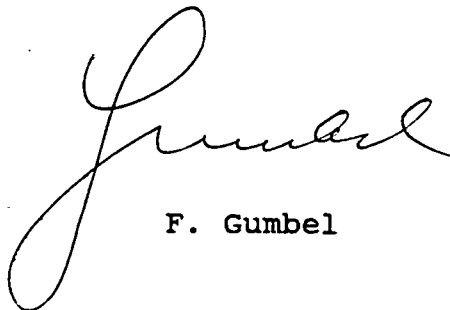
1. The impugned decision is set aside.
2. The main request is rejected.
3. The case is remitted to the first instance with the order to maintain the European patent based on the following documents:
 - claims and description as submitted during oral proceedings,
 - drawings as granted.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel

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4.5.96 W. Rorer