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File Number: T 345/90 - 3.2.4
Application No.: 83 105 048.9
Publication No.: 0 098 380
Title of invention: Friction spinning apparatus

Classification: D01H 1/135

D E C I S I O N
of 26 February 1992

Proprietor of the patent: HOLLINGSWORTH (U.K.) LIMITED
Opponent: Schubert & Salzer Maschinenfabrik AG

Headword:

EPC Articles 54, 56

Keyword: "Novelty (yes)"
"Inventive step (yes)"

Headnote



Case Number : T 345/90 - 3.2.4

D E C I S I O N
of the Technical Board of Appeal - 3.2.4
of 26 February 1992

Appellant : Schubert & Salzer Maschinenfabrik AG
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Respondent : HOLLINGSWORTH (U.K.) LIMITED
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Decision under appeal : Interlocutory decision of Opposition Division of
the European Patent Office dated 13 December 1989
and dispatched on 9 March 1990 concerning
maintenance of European patent No. 0 098 380 in
amended form.

Composition of the Board :

Chairman : C.A.J. Andries
Members : H.J. Seidenschwarz
W. Moser

Summary of Facts and Submissions

- I. European patent No. 0 098 380 comprising three claims was granted on 15 July 1987 in response to European divisional application No. 83 105 048.9 filed on 17 February 1982.
- II. One opposition was filed against the European patent requesting that it be revoked on the grounds of lack of novelty or lack of inventive step.

The following document was included in those referred to:

D2: DE-A-30 25 451.

- III. By interlocutory decision at the conclusion of the oral proceedings of 13 December 1989 the Opposition Division maintained the European patent in an amended form on the basis of Claims 1 to 3 filed during the oral proceedings. The written statement of reasons for the decision was dispatched on 9 March 1990.
- IV. Claim 1 according to the patent as amended reads as follows:

"Apparatus for open-end spinning of yarn, of the type comprising two rotatable bodies (1, 2) having external surfaces which define an elongate gap which narrows toward a line of closest approach of the surfaces, means for rotating one (1) of the bodies in a direction so that its external surface moves into the gap and means for moving the other body (2) in a direction so that its external surface moves out of the gap to twist fibres in the gap to form a yarn (419), means for withdrawing the yarn (419) along the gap, and a fibre feed duct (41') having an elongate mouth within the gap and arranged to feed fibres substantially directly into the gap such that some fibres

can fall directly on the yarn, said mouth being defined by first and second opposite side walls and first and second end walls of the duct, characterised in that the fibre feed duct (41') is biased to one side so as to tend to direct more of the fibres towards the surface which moves into the gap, in that the fibre feed duct (41') is formed of two parts (415 416) of which one (415) defines said first side wall of the fibre feed duct (41') which is plane, and the other (416) defines the second side wall and all other structural parts completing the fibre feed duct (41') including the first and second end walls, and in that the feed duct (41') tapers toward the elongate mouth, with all the taper formed by the said opposite side wall in the other duct part (416)."

V. On 24 April 1990 the Appellant (Opponent) lodged an appeal against the decision, paying the appeal fee simultaneously. The Statement of Grounds was filed on 17 July 1990.

VI. In his Statement of Grounds, the Appellant raised the following objections:

(i) The second feature of the characterising portion of Claim 1,

- in that the fibre feed duct (41') is formed of two parts (415, 416) ... second end walls,

only contributes to the solution of the technical problem as specified in the decision of the Opposition Division. This feature is, however, known from document D2 (Figure 6).

(ii) The first and third feature of the characterising portion of Claim 1,

- in that the fibre feed duct (41') is biased to one side ... into the gap, and
- in that the feed duct (41') tapers ... other duct parts (416),

do not contribute to the solution of the technical problem. They must, therefore, not be considered when assessing the inventive step of the subject-matter of Claim 1 (cf. also decision T 37/82, OJ EPO, 1984, 71).

Furthermore, the first feature results from page 1, lines 121 to 125 and Figure 2, of document GB-A-2 042 599 (D6) disclosing the prior art within the meaning of Rule 29(1)(a) EPC, and the second feature, respectively, is known from document D2.

- (iii) It is within the scope of the knowledge of the person skilled in the art to apply the feature disclosed by Figure 6 of document D2 to an apparatus according to document D6.

The Appellant was therefore of the opinion that the subject-matter of Claim 1 did not involve an inventive step.

VII. The Respondent (Proprietor) contested the Appellant's view mainly with the arguments that all features contributed to the solution of the same technical problem to be solved and that the prior art according to document D2 was not of the type as defined in the pre-characterising portion of Claim 1. This prior art was, therefore, not relevant to an assessment of the state of the art from which the subject-matter of Claim 1 proceeded.

VIII. With his letter of 7 March 1991 the Appellant informed the Board of Appeal that he would not attend the oral proceedings requested by him and the Respondent. He asked the Board of Appeal to take its decision on the basis of the contents of the documents on file.

According to the letter of 16 April 1991, the Respondent informed the Board of Appeal that his decision to request oral proceedings was conditional on the Appeal Board coming to an adverse decision and he would not press his request if the Board was able to maintain the patent in suit with the amendments agreed at oral proceedings before the Opposition Division.

On 25 April 1991, the oral proceedings were cancelled.

IX. The Board informed the parties by a communication dated 14 November 1991 of its provisional view that the patent could be maintained in amended form because the closest prior art document did not give any hint towards solving one of the two technical problems mentioned in said communication. In response to this communication the Respondent recorded his disagreement with the Board's opinion expressed therein that the solution of "the other problem" was obvious.

No observations on the communication were filed by the Appellant.

X. The Appellant requested that the decision of the ~~Opposition Division be set aside and the patent in suit be~~ revoked.

The Respondent requested that the appeal be dismissed which implies the further request that the patent be maintained as modified during opposition proceedings.

Reasons for the Decision

1. The appeal is admissible.

2. Amendments

Each of Claim 1 and dependent Claim 2 comprises a combination of all features already mentioned in the corresponding Claims 1 and 2 of the patent as granted and further clarification disclosed by the drawing of the application as filed and of the patent as granted.

Dependent Claim 3 corresponds to Claim 3 of the application as filed and the patent as granted.

The description is brought into conformity with Claim 1. Further amendments in the description concern minor errors of transcription (column 2, line 15: "mount" to "mouth", and line 63: "dired" to "directed").

Hence, the claims and the description do not contravene with Article 123(2) and (3) EPC.

3. Novelty

None of the available documents discloses an apparatus according to Claim 1. Since this has not been disputed by the Opponent there is no need for further detailed substantiation of this matter.

4. Closest state of the art, technical problem and solution

4.1 The pre-characterising portion of Claim 1 is derived from the prior art as set out in document D6 which discloses in combination the features mentioned in said pre-characterising portion. However, in said document nothing is disclosed having regard to the design of the fibre feed duct for directing more of the fibres towards one of the two rotatable bodies, and to a two-part form. Therefore, the content of the pre-characterising portion of Claim 1 reflects the prior art according to document D6 within the meaning of Rule 29(1)(a) EPC.

4.2 In the known prior art apparatus a considerable amount of fibres is also directed toward the external surface of the rotatable body moving out of the gap, which results from the symmetrical feed of the fibres onto the rotatable bodies, and which results in fibres firstly being flung around the upper surface of the yarn by the rotation of the yarn and hence not joining into the yarn smoothly, (cf. EP-B-0 098 380, column 3, lines 7 to 9 and 33 to 36).

Furthermore, the disclosure of document D6 does not teach any particular form of construction for the fibre feed duct. However, not only the length of the feed duct (in terms of its ability to guide the fibres directly onto the forming yarn) but also its construction are important.

Therefore, a first technical problem to be solved is to modify the fibre feed duct such that an improved yarn quality is obtained, and a second technical problem to be solved is to provide for a fibre feed duct which is to be constructed and assembled simply (cf. EP-B-0 098 380, column 1, lines 36 to 41; column 3, lines 9 to 25).

4.3 To solve the first technical problem, the fibre feed duct is modified such that its elongate mouth is biased to the side adjacent the external surface moving into the gap or, more specifically, the elongate mouth opens such that the inner side of one of the side walls of the fibre feed duct lies substantially immediately adjacent said external surface while a spacer surface lies between the inner side of the opposite side wall and the external surface which moves out of the gap. In this way, the fibre feed duct tends to direct more of the fibres towards the external surface moving into the gap than to the external surface moving out of the gap. It is clear from Figure 2 of the patent in suit that this tendency is supported by the fact that the fibre feed duct tapers toward the elongate mouth with all the taper formed by said opposite wall, which elongate mouth is within the elongate gap defined by the two external surfaces.

According to the teaching of Claim 1, the second technical problem is solved by forming the fibre feed duct which is basically a tube of complex form in two separate parts each of which has a different form. One of the parts defines one of the side walls of said duct and is plane. The other part defines the remaining structural part of said duct and has therefore a complex form. The partition of the fibre feed duct in two parts having different forms permits adaptation of the construction of the parts according to their form which simplifies the production of said parts, in particular of the remaining structure part with the taper formed by that side wall which defines the side wall opposite to said one side wall. Since one of the parts is flat and the other part is complex, these two parts can be assembled simply by putting the flat part like a cover on the complex part which ensures that mating of both parts will always be an accurate fit thus avoiding any fibre entrapment areas.

5. Inventive step

As indicated in section 4.2 above, there are two separate technical problems which are solved by distinct features. Indeed, the first and third feature of the characterising portion (see section VI(ii) above) contribute in conjunction with each other to solve the first problem and the second feature (see section VI(i) above) contributes independently of the other two features to the solution of the second particular technical problem. Both problems are disclosed in the description of the patent in suit and are defined on the basis of an objective analysis of the differences between the closest prior art known from document D6 and the invention. The combination of the first and third feature on the one hand and the second feature alone, on the other hand must be, therefore, considered separately in assessing the inventive step of the subject-matter of Claim 1. This is, however, not inconsistent with section 3 of the decision T 37/82 cited by the Appellant.

Consequently, the question to be considered is whether each of the solutions as specified in Claim 1 involves an inventive step.

5.1 Solution of the first technical problem

5.1.1 According to Figure 2 of document D6 (cf. also above section 4.1), the fibres are fed symmetrically onto both external surfaces. The opinion of the Appellant, that the feature "the fibre feed duct is biased to one side" is suggested by Figure 2 of said document (page 1, lines 121 to 125), is not correct, since the only purpose of rotating the external surface moving out of the gap on a pair of arms about a shaft is to increase or decrease the gap between both external surfaces. This movement,

however, does not influence the position of the fibre feed duct and therefore also not the direction of the fibre flow with respect to the external surface moving into the gap.

Consequently, no hint can be derived from document D6 for modifying in the known apparatus the fibre feed duct in the sense that more fibres are directed toward the external surface moving into the gap than toward the external surface moving out of the gap.

5.1.2 Document D2 discloses an apparatus for open-end spinning yarn, which is provided with a feed duct (19) which guides the fibres on a rotating surface (40) of a first rotatable body (36), which centrifuges the fibres in such a manner that the fibres are deposited on a rotating surface (31, 32) of a second rotatable body (23) for being carried round towards a gap between this second rotatable body and the rotating surface (48) of a third rotatable body (47) where they form a yarn. Figure 6 indicates clearly the fibre feed duct terminating at the left-hand side of the drawing and the yarn being formed at the right-hand side of the drawing, and therefore there is no guidance of the fibres to ensure that they land directly on the yarn. Furthermore, the fibre feed duct (19) is linear (cf. page 11, lines 19 and 20; Figures 2, 4 and 5) or has a taper in the passage along which the fibres are fed to the rotatable bodies (cf. Figure 6).

Because of the remoteness of the friction open-end spinning system disclosed in said document from the prior art with which the subject-matter of Claim 1 of the patent in suit is concerned, the person skilled in the art does not get any information for modifying the mouth of the fibre feed duct according to the closest prior art such that this fibre feed duct can direct more fibres to the

one rotating external surface than to the other rotating external surface.

5.1.3 From the above considerations the Board holds that, by incorporating the solution of the first technical problem, Claim 1 already involves an inventive step.

5.2 Solution of the second technical problem

In the present case, the fibre duct is complex in shape due to the plane flat wall defining one opposite wall, due to the wall defining the other opposite side wall, and due to all the structural parts necessary to cooperate with the plane flat wall to form the complete feed duct so that it has near the elongate mouth a taper toward said mouth.

The person skilled in the art knows, however, that it is complicated to construct a device having a complex form in one piece and that the construction of such a device can be simplified by dividing it into different parts which division depends on the manufacturing process of these parts.

It is, therefore, obvious to said person skilled in the art to form the fibre feed duct in two parts so that each of said parts can be constructed simpler, in accordance with its shape, and that both parts can be assembled simply. This comes within the scope of the common practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be contemplated in advance.

5.3 According to the jurisprudence of the Boards of Appeal, it suffices however for the inventivity of the subject-matter of an independent claim when one of the features, or one of the groups of features, of this claim contains

something inventive (cf. decision: "Time limit for appeal/BEHR", T 389/86, OJ EPO, 1988, 87, non-published sections 4.2 and 4.3).

- 5.4 Furthermore, the other available documents published before the priority date of the patent in suit give likewise no hint to the subject-matter of Claim 1. Their teachings could not, either alone or in combination with the teachings of the documents discussed in the foregoing paragraphs, lead the person skilled in the art to an apparatus according to the teaching of said Claim 1.
- 5.5 Therefore, the subject-matter of Claim 1 as amended involves an inventive step (Article 56 EPC).

Claim 2 and 3 concern particular embodiments of the subject-matter of Claim 1 and thus are not open to objection.

6. The patent can therefore be maintained as amended on the basis of the documents specified by the Opposition Division on EPO Form 2327.4 annexed to the appealed decision.

Order

For these reasons, it is decided:

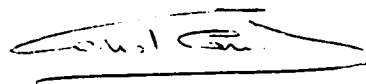
The appeal is dismissed.

The Registrar:



N. Maslin

The Chairman:



C. Andries