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**Datasheet for the decision
of 4 February 2022**

Case Number: T 2563/17 - 3.2.03

Application Number: 06112083.8

Publication Number: 1840487

IPC: F25B41/06, B23P15/00,
C22C21/00, C22F1/04, B21C1/22,
B21C23/08

Language of the proceedings: EN

Title of invention:

Endless capillary tubes in aluminium alloy and lamination
valves comprising aluminium alloy capillary tubes

Patent Proprietors:

AROTUBI IT S.r.l.
ARO TUBI COMPONENTS POLAND Sp. Z.o.o.

Opponent:

Feinrohren S.p.A.

Headword:

Relevant legal provisions:

RPBA 2020 Art. 13(2)

Keyword:

Amendment after summons - exceptional circumstances (no)
Amendment to appeal case - amendment gives rise to new
objections (yes) - amendment overcomes issues raised (no)
Late-filed request - Patent as granted withdrawn and re-
submitted during appeal proceedings - admitted (no)

Decisions cited:

T 0036/12, T 0052/15, T 1695/15, T 0764/16, T 1187/16,
T 0042/17, J 0014/19, T 0247/20, T 1891/20, G 0003/14

Catchword:



Beschwerdekammern
Boards of Appeal
Chambres de recours

Boards of Appeal of the
European Patent Office
Richard-Reitzner-Allee 8
85540 Haar
GERMANY
Tel. +49 (0)89 2399-0
Fax +49 (0)89 2399-4465

Case Number: T 2563/17 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 4 February 2022

Appellant: Feinrohren S.p.A.
(Opponent) Via Generale Reverberi, 8
25050 Passirano (BS) (IT)

Representative: Modiano, Micaela Nadia
Modiano & Partners
Via Meravigli, 16
20123 Milano (IT)

Respondent: AROTUBI IT S.r.l.
(Patent Proprietor 1) Via Risorgimento, 12
28345 Costa Masnaga (LC) (IT)

Respondent: ARO TUBI COMPONENTS POLAND Sp. Z.o.o.
(Patent Proprietor 2) ul. Wiosenna 14/2
53-017 Wroclaw (PL)

Representative: Torti, Carlo Maria Emilio
Notarbartolo & Gervasi S.p.A.
Viale Achille Papa, 30
20149 Milano (IT)

Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 18 September
2017 rejecting the opposition filed against
European patent No. 1840487 pursuant to Article
101(2) EPC.**

Composition of the Board:

Chairman G. Patton
Members: B. Goers
 N. Obrovski

Summary of Facts and Submissions

- I. European patent No. 1 840 487 (hereinafter: "the patent") relates to a capillary tube in aluminium alloy, a method for producing it and its use.
- II. The opposition division's decision to reject the opposition, posted on 18 September 2017, was appealed by the opponent (hereinafter: "the appellant").
- III. With the consent of the parties, oral proceedings before the Board were held on 4 February 2022 by videoconference using the Zoom platform.
- IV. At the end of the oral proceedings, the appellant requested that:
 - the decision under appeal be set aside
 - the patent be revoked.

The patent proprietors (hereinafter: "the respondents") requested that the patent be maintained in amended form on the basis of the new main request or the auxiliary request, both filed with the submission dated 4 May 2021. If neither of these claim requests should be admitted into the appeal proceedings, the respondents requested that the patent be maintained as granted, as had been requested in the previous main request (which had been unconditionally withdrawn with the submission dated 4 May 2021).

- V. During the oral proceedings before the Board, the respondents had raised an objection under Rule 106 EPC due to an alleged violation of their right to be heard because of the Board's conclusion not to admit their

request to maintain the patent as granted. This objection was, however, withdrawn at the end of the oral proceedings.

VI. The following evidence, which was relied on in the decision under appeal, is relevant for the present decision:

D14: The Aluminium Automotive Manual, European Aluminium Association, Part 3, pp. 1-13 (2002)

D16/D16A: Technical report N. 14LA00965- 14LA01111- 14LA01119 conducted at betalab for customer Feinrohren S.p.a - English/ Italian

VII. Claims of the claim requests relevant for the decision

(a) Independent claims 1 and 4 of the **patent as granted** read as follows (feature numbering in "[]" as in the decision under appeal, amendments versus claims 1 and 4 of the application as filed in bold, deletions in strike through):

Claim 1:

"[F1] *Endless capillary tube in aluminium alloy* **of the type**

[F2] **having an internal diameter between the range 0.2 - 4.5 mm and**

[F3] **a length within the range 100 - 10000 mm,**
characterised in that

[F4] *the flow rate of two segments of the capillary tube having a length of 2500 mm cut from two positions*

taken at random from the endless capillary tube does not vary by more than $\pm 6\%$,

[F5] **wherein the aluminium alloy consisting of: Si 0.15% in weight max., Fe 0.25% in weight max., Cu 0.10% in weight max., Mn 0.90-1.10% in weight max., Mg 0.06% in weight max., Cr 0.06% in weight max., Zn 0.10% in weight max., Ti 0.06% in weight max., the remainder being aluminium and inevitable impurities."**

Claim 4:

"[M1] Method for the production of endless capillary tubes in aluminium alloy as described in the previous claims comprising the following stages:

[M2] • Hot extrusion of a roughed blank;

[M3] • Successive stages of cold drawing, the number of stages depending on the envisaged machining cycle; the external diameter and the tube thickness are reduced with each extrusion stage until the final measurement is obtained;

[M4] • Winding to form wound coils;.

[M5] • Washing of the internal surface to eliminate machining residue ~~(lubricants etc.)~~;

[M6] • Heat treatment to modify the mechanical characteristics of the capillary tube increasing the ductility;"

(b) Claims 1 and 4 of the **main request** have the following amendments over the corresponding claims of the patent as granted marked in bold and strike-through:

Claim 1:

"A single capillary tube obtained from an endless capillary tube in aluminium alloy of the type having an

*internal diameter between the range 0.2 - 4.5 mm and a length within the range 100 - 10000 mm, characterised in that the flow rate of two segments of the **endless** capillary tube having a length of 2500 mm cut from two positions taken at random from the endless capillary tube does not vary by more than $\pm 6\%$, wherein the aluminium alloy consisting of: Si 0.15% in weight max., Fe 0.25% in weight max., Cu 0.10% in weight max., Mn 0.90-1.10% in weight max., Mg 0.06% in weight max., Cr 0.06% in weight max., Zn 0.10% in weight max., Ti 0.06% in weight max., the remainder being aluminium and inevitable impurities."*

Claim 4:

*"Method for the production of ~~endless~~ **single** capillary tubes in aluminium alloy as described in the previous claims comprising the following stages:*

- Hot extrusion of a roughed blank;*
- Successive stages of cold drawing, the number of stages depending on the envisaged machining cycle; the external diameter and the tube thickness are reduced with each extrusion stage until the final measurement is obtained;*
- Winding to form wound coils;*
- Washing of the internal surface to eliminate machining residue;*
- Heat treatment to modify the mechanical characteristics of the **endless** capillary tube increasing the ductility."*

(c) Independent claim 2 of the **auxiliary request** has the following amendments over claim 10 as granted marked in bold and strike-through:

*"Lamination valve for household appliances comprising a **single capillary tube according to claims, 1-3, 5, 6, 8, 9** wherein the **single capillary tube is obtained from an endless capillary tube in aluminium alloy of the type having an internal diameter between the range 0.2 - 4.5 mm and a length within the range 100 - 10000 mm, wherein the flow rate of two segments of the endless capillary tube having a same length of 2500 mm cut from two positions taken at random from the endless capillary tube does not vary by more than $\pm 6\%$, wherein a geometrical division in two of the endless capillary tube produces two equal sections having the same length, whose respective flow rates do not differ from each other by more than $\pm 6\%$, wherein the aluminium alloy consisting of: Si 0.15% in weight max., Fe 0.25% in weight max., Cu 0.10% in weight max., Mn 0.90-1.10% in weight max., Mg 0.06% in weight max. Cr 0.06% in weight max., Zn 0.10% in weight max., Ti 0.06% in weight max., the remainder being aluminium and inevitable impurities."***

VIII. The appellant's arguments relevant to the present decision can be summarised as follows.

(a) Main request - admittance

The main request should not be admitted into the proceedings. It was filed late without cogent reasons. Furthermore, the amendments to claim 1 gave rise to further objections under Articles 84, 123(2) and 123(3) EPC. Claim 1 was ambiguous on whether the length range referred to the endless or the single capillary tube. This ambiguity was also present in all other claims since they referred back to claim 1. The subject-matter of claim 4 was both unclear and contained added matter since process steps now linked to the single capillary

tube had only been disclosed for the endless capillary tube. Also, no division step was included.

(b) Auxiliary request - admittance

The auxiliary request should not be admitted into the proceedings. It was also filed late without cogent reasons. Furthermore, since at least claim 2 incorporated the features of claim 1 of the main request, it was *prima facie* not allowable for the same reasons. Also, granted claim 10, due to the wording of the back references "according to claims, 1-3, 5, 6, 8, 9", included all features of the referenced claims while only those of claims 1 and 10 were considered in claim 2 of the auxiliary request. This constituted an extension of the scope of protection under Article 123(3) EPC.

(c) Patent as granted - admittance

The re-filing of the patent as granted should not be admitted. The claims of the patent as granted were not *prima facie* allowable since they contained added matter and involved no inventive step.

Claim 1 extended beyond the subject-matter of the application as filed since it related to an endless capillary tube having a length range not disclosed for the endless capillary tube.

Starting from D14, claim 1 did not involve an inventive step. The selection of the claimed alloy was not linked to a specific effect. Evidence D16 showed that the claimed effect was achievable also for other 3103 aluminium alloys. The respondents did not provide any evidence to the contrary.

IX. The respondents' arguments relevant to the present decision can be summarised as follows.

(a) Main request - admittance

The main request should be admitted since it *prima facie* overcame the objections raised by the Board in the summons. Its filing was also a direct reaction to objections made more precise only in the preliminary opinion of the Board. When considering the preliminary opinion, procedural economy was also improved with the new request. Claim 1 was clear for a skilled person since a mind willing to understand could only construe that the claim disclosed the length range of a single capillary tube. Claim 4 was further clear from the application as a whole.

Moreover, the objections in the communication under Article 15(1) RPBA 2020 were more precise than the objections of the appellant.

(b) Auxiliary request - admittance

Due to the deletion of claims 1 and 4 of the main request, the auxiliary request did not give rise to additional objections and was allowable. The back-references of claim 10 of the patent as granted had to be understood as alternatives in the sense of "any of".

(c) Patent as granted - admittance

The re-filing of the patent as granted had to be admitted in the procedure. It was filed in reaction to the surprising development that the main and auxiliary requests had not been admitted. It was furthermore

allowable. D14 was not a suitable closest prior art since it related to automotive applications rather than to lamination valves in cooling cycles. Furthermore, it failed to disclose any of features [F2] to [F5]. The specific selection of the claimed alloy had, in addition to the uniformity according to feature [F4], the effect of reducing wear as according to paragraph [0035] of the patent. This effect was not anticipated by the evidence D16 submitted by the appellant. In addition, D16 did not sufficiently show that all 3103 aluminium alloys also have the claimed performance.

Reasons for the Decision

Main request - admittance

1. The main request was not admitted into the appeal proceedings for the following reasons.
 - 1.1 The respondents submitted the main request with the letter dated 4 May 2021 after notification of the summons to oral proceedings. Consequently, Article 13(2) RPBA 2020 applies (Article 25(1) and (3) RPBA 2020). In this context, the criteria under Article 13(1) RPBA 2020 may also be taken into consideration (see document CA/3/19, page 43, explanatory remarks on Article 13(2) RPBA 2020).
 - 1.2 The main request constitutes an amendment to the respondents' appeal case (see J 14/19, Reasons 1.5). In accordance with Article 13(2) RPBA 2020, any such amendment made after notification of a summons to oral proceedings shall, in principle, not be taken into account unless there are exceptional circumstances which have been justified with cogent reasons by the party concerned.

- 1.3 The objection of extension of subject-matter with respect to the combination of the features "endless capillary tube" and "length of 100 to 10000 mm" had been the subject of the opposition proceedings and was part of the decision under appeal. It was furthermore raised again in the appellant's statement of grounds of appeal.
- 1.4 In its communication under Article 15(1) RPBA 2020, the Board gave a preliminary opinion on this objection. As to the alleged higher degree of precision in the Board's preliminary opinion, the principle that parties may refine their arguments within the previously established framework without this automatically constituting an amendment to their appeal case (see T 247/20, Reasons 1.3), applies all the more to a Board taking up and refining arguments introduced by a party (see T 1891/20, Reasons 4.1.4).
- 1.5 A party cannot successfully invoke exceptional circumstances under Article 13(2) RPBA 2020 based on the mere fact that the Board gives a preliminary opinion in favour of the other party and in contradiction to the conclusions in the decision under appeal (see T 42/17, Reasons 4.4; T 764/16, Reasons 3.3.2 or T 1187/16, Reasons 3.2). In the case at hand, the respondents instead had to expect that the Board might have a preliminary opinion that differed from the opinion of the opposition division. Therefore, the Board's preliminary opinion in its communication under Article 15(1) RPBA 2020 can justify neither the late-filing nor the admittance of the main request into the appeal proceedings.

1.6 The respondents further argued that the late-filed main request overcame the objections raised by the appellant and the Board, this also supporting the presence of exceptional circumstances.

It is correct that at the third level of the convergent approach, which applies here, the Board may, on a discretionary basis, also rely on criteria applicable at the second level, such as whether an amendment overcomes the objections raised by another party or the Board. However, a further criterion under Article 13(1) RPBA 2020 is whether an amendment gives rise to new objections. It does in the present case.

1.7 *Prima facie* allowability of claim 1

The amendments give rise to new objections under Article 84 EPC against claim 1.

By inserting the wording "single capillary tube obtained from" into claim 1, an ambiguity is created regarding the length feature. This ambiguity is a direct consequence of the amendment originating from the original description and thus may be examined for compliance with the requirements of Article 84 EPC (see decision G 3/14, catchword). The claim language as amended lacks a clear and unambiguous relationship between the length range and the claimed product (i.e. the single capillary tube). According to the claim wording the length range can also relate to the precursor (i.e. the endless capillary tube from which the single capillary tube is obtained according to the product-by-process feature). The respondents' argument that a skilled person with a mind willing to understand would not consider the length range to be related to an entity described as "endless" is not convincing. The

term "endless" for the capillary tube can only be construed in that a final product is not directly produced but obtained from a longer continuously extruded/drawn production batch. The skilled person is thus well aware that an endless capillary tube also has in fact an end and therefore a certain length, as indeed is illustrated by the patent (in paragraph [0020]). The respondents' argument that in view of the whole specification this ambiguity is resolved is not sufficient since the claim itself has to be clear.

1.8 *Prima facie* allowability of claim 4

The amendments also give rise to further objections to claim 4 under Article 123(2) and (3) EPC.

1.8.1 Due to the amendment to claim 4, each method steps relates to a single capillary tube, although in the granted version these steps related to the production of an endless capillary tube, i.e. the precursor of the single capillary tube. Thus, the subject-matter of claim 4 is an *aliud* with respect to claim 4 as granted. Furthermore, method steps such a "winding to form coils" are not disclosed for the single capillary tube in the application as filed. For these reasons, the requirements of Articles 123(2) and (3) EPC are not met.

1.8.2 In addition, the method for obtaining a single capillary tube according to paragraph [0021] of the A-publication requires division from an endless capillary tube. However, such a step is not defined in claim 4. Thus also for this reason, the requirements of Article 123(2) EPC are not met.

Auxiliary request - admittance

2. The auxiliary request was not admitted into the appeal proceedings.

2.1 Like the main request, the auxiliary request was filed after notification of the summons, and no exceptional circumstances have been presented which could justify the late filing and the admittance of the auxiliary request.

2.2 Furthermore, claim 2 of the auxiliary request incorporates the features of claim 1 of the main request. Hence, claim 2 of the auxiliary request is *prima facie* not allowable under Article 84 EPC either for the same reasons.

Request to maintain the patent as granted - admittance

3. The re-submission of the claim request relating to the patent as granted was not admitted into the proceedings pursuant to Article 13(2) RPBA 2020.

3.1 With the letter of 4 May 2021, the respondents explicitly and unconditionally withdrew in the appeal proceedings the request to maintain the patent as granted ("*It is therefore no longer requested that the patent be maintained as granted*"). This claim request thus no longer formed part of the respondents' appeal case. The re-submission of this claim request during the oral proceedings before the Board is thus an amendment to the respondents' appeal case. Its admittance is subject to the presence of exceptional circumstances and the Board's discretion under Article 13(2) RPBA 2020.

- 3.2 When applying Article 13(2) RPBA 2020, the Board may also apply criteria under Article 13(1) RPBA 2020, which include - *mutatis mutandis* - Article 12(4) to (6) RPBA 2020. Under Article 12(6) RPBA 2020, the Board shall in principle not admit claim requests which were not maintained in the proceedings before the department of first instance. This applies all the more to claim requests not maintained in the appeal proceedings (see T 1695/15, Reasons 4).
- 3.3 In this respect, a withdrawn claim request relating to the patent as granted is not to be treated differently than any other withdrawn claim request. It would be detrimental to procedural economy if a patent proprietor were allowed to always go back to the patent as granted, regardless of its previous withdrawal of this claim request and the subsequent procedural developments (see T 52/15, Reasons 2.7 and T 36/12, Reasons 2.2).
- 3.4 Contrary to the respondents' allegations, the mere fact that the main request and the auxiliary request were not admitted into the appeal proceedings does not constitute exceptional circumstances which could justify the re-submission of the claim request related to the patent as granted. A party must always take into consideration that claim requests whose admittance is subject to a Board's discretion may not be admitted by a Board.
- 3.5 Furthermore, the patent as granted is *prima facie* not allowable in view of added subject-matter.
- 3.5.1 The Board agrees with the appellant that according to general principles of claim interpretation, the feature

of claim 1 "*endless capillary tube*" cannot be interpreted as a capillary tube only characterised by a continuous manufacturing process, regardless of the feature "endless". Therefore, it has to be considered a technical feature for the assessment of the ground under Article 100(c) EPC. According to the definition in paragraph [0019] of the A-publication, the term relates to "*seamless capillary tubes obtained by means of continuous production*" which are preferably "*at least 100 metres long*". A length range between 1000 to 10000 mm is, on the other hand, only disclosed in paragraph [0021] of the A-publication for the "*single capillary tubes*" obtained by "*simple division*" of the endless capillary tube. Since an endless tube having a length from 1000 to 10000 mm is not part of the disclosure of the application as filed, the combination of the features [F1] and [F3] constitutes added matter.

- 3.5.2 Therefore, the (brief) reasoning in the appealed decision that the wording "*endless capillary tube*" referred to "*a continuous manufacturing process*" and that the basis was found in claim 1 and paragraphs [0004], [0005], [0010] and [0019] to [0021] of the A-publication is not convincing.
- 3.5.3 The above corresponds to the Board's preliminary assessment of the case in its communication under Article 15(1) RPBA 2020. In the oral proceedings before the Board, the respondents did not provide any convincing arguments which could alter the above assessment.
- 3.6 The Board further notes that the patent as granted is *prima facie* not allowable under Article 56 EPC either.

- 3.6.1 D14 discloses on page 10 drawn aluminium tubes made, *inter alia*, of 3103 type aluminium ("EN AW-3103"). Claim 1 is not directed to a lamination valve but to an endless capillary tube as such. Hence, the skilled person would consider D14, which deals with aluminium alloy tubes, as a suitable starting point.
- 3.6.2 The outer diameter of the tubes disclosed as "OD" on page 10 of D14 is in the range of 2 to 25 mm. By further considering the wall thickness range disclosed here as "WT" of 0.3 to 2 mm, an inner diameter inside the claimed range is also directly and unambiguously taught to the skilled person (outer diameter of 2 mm, wall thickness of 0.3 mm and inner diameter of 1.4 mm).
- 3.6.3 It is already questionable whether the claimed alloy composition according to feature [F5] can be regarded as a novel selection over the 3103 aluminium alloy class used in D14. However, in any case, this selection does *prima facie* not have a specific technical effect, i.e. the selection is not purposive (see Case Law of the Boards of Appeal, 9th edition, 2019, I.C.6.3.1).
- 3.6.4 As demonstrated by the appellant with reference to D16, other 3103 aluminium alloys exist which although do not have the low iron and manganese content as claimed do provide a uniform performance in accordance with feature [F4]. This speaks against the alloy composition according to feature [F5] having any specific technical effect. The experimental data in D16 were submitted by the appellant during the opposition proceedings and further relied on in the statement of grounds of appeal. The respondents challenged its relevance neither in their reply to the appeal nor in later written submissions.

- 3.6.5 During the oral proceedings before the Board the respondents argued for the first time that the specific selection of the alloy of claim 1 had the additional effect of reducing wear during the production of the endless capillary tubes. In the patent, this is only briefly mentioned in relation to the amount of magnesium in paragraph [0035], and no assessment criteria or experimental data for this alleged further effect are provided. Therefore, the Board is not convinced of this alleged further effect.
- 3.6.6 In the absence of a specific technical effect related to the alloy composition according to feature [F5], the objective technical problem is to provide an alternative capillary tube to achieve controlled flow rates that remain constant.
- 3.6.7 The Board considers that the skilled person would perform experiments within the 3103 aluminium alloy class used in D14. By doing so, the skilled person would arrive at the claimed subject-matter with the claimed property [F4] in an obvious manner, having in mind that the claimed composition according to feature [F5] broadly overlaps with the 3103 aluminium alloy class. The length according to the range defined by feature [F3] amounts to a usual design choice of the skilled person not related with the other distinguishing features.
4. Due to the absence of any admitted claim request, the patent is to be revoked.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:



C. Spira

G. Patton

Decision electronically authenticated