

Internal distribution code:

- (A) [-] Publication in OJ
- (B) [-] To Chairmen and Members
- (C) [-] To Chairmen
- (D) [X] No distribution

**Datasheet for the decision
of 20 March 2024**

Case Number: T 1687/22 - 3.3.05

Application Number: 15722847.9

Publication Number: 3137641

IPC: C22C21/00, C22C21/06, C22F1/04,
C22F1/047

Language of the proceedings: EN

Title of invention:

METHOD OF MANUFACTURING AN ALUMINUM CONTAINER MADE FROM
ALUMINUM SHEET

Patent Proprietor:

Kaiser Aluminum Warrick, LLC

Opponents:

Novelis Inc.
C-TEC CONSTELLIUM TECHNOLOGY CENTER/CONSTELLIUM
NEUF-BRISACH/Constellium Muscle Shoals LLC

Headword:

Aluminum bottle/Kaiser

Relevant legal provisions:

EPC Art. 123(2), 83, 87, 54, 56

Keyword:

Amendments - allowable (yes)
Sufficiency of disclosure - (yes)
Priority - (yes)
Novelty - (yes)
Inventive step - (yes)

Decisions cited:

G 0001/03, T 0464/94

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 1687/22 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 20 March 2024

Appellant:
(Opponent 1)

Novelis Inc.
3560 Lenox Road, Suite 2000
Atlanta, GA 30326 (US)

Representative:

Weickmann & Weickmann PartmbB
Postfach 860 820
81635 München (DE)

Respondent:
(Patent Proprietor)

Kaiser Aluminum Warrick, LLC
4000 West State Route 66
Newburgh IN 47630 (US)

Representative:

Forresters IP LLP
Skygarden
Erika-Mann-Straße 11
80636 München (DE)

Party as of right:
(Opponent 2)

C-TEC CONSTELLIUM TECHNOLOGY CENTER/CONSTELLIUM
NEUF-BRISACH/Constellium Muscle Shoals LLC
Boîte Postale CS 10027 PI Parc Economique
Centr'Alp, 725, Rue Aristide Berges/
ZIP Rhenane Nord RD 52/
4805 Second Street
38314 Voreppe
68600 Biesheim/Muscle Shoals AL 35661 (FR)

Representative:

Constellium - Propriété Industrielle
C-TEC Constellium Technology Center
Propriété Industrielle
Parc Economique Centr'Alp
725, rue Aristide Bergès
CS10027
38341 Voreppe (FR)

Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted on
11 May 2022 concerning maintenance of the
European Patent No. 3137641 in amended form.

Composition of the Board:

Chairwoman S. Besselmann
Members: G. Glod
S. Fernández de Córdoba

Summary of Facts and Submissions

I. The appeal filed by opponent 1 (the appellant) is against the opposition division's decision finding that European patent EP 3 137 641 in amended form based on the then auxiliary request 5 met the requirements of the EPC.

II. Claim 1 of the then auxiliary request 5 (now the main request) reads as follows.

*"1. A method comprising:
obtaining an aluminum sheet comprising a 3xxx or a 5xxx alloy; wherein the aluminum sheet has a tensile yield strength as measured in the longitudinal direction of 186-228 MPa (27-33 ksi) and an ultimate tensile strength; wherein the ultimate tensile strength minus the tensile yield strength is less than 22.8 MPa (3.30 ksi) (UTS-TYS < 22.8 MPa (3.30 ksi)); and
wherein the aluminum sheet has a thickness of 0.015 cm to 0.076 cm (0.006 inch to 0.030 inch);
drawing and ironing the aluminum sheet to form an aluminum container having a dome;
necking the aluminum container to reduce a diameter of a portion of the aluminum container by at least 26 % to form a bottle;
expanding a section of the portion of the aluminum container having the reduced diameter; and
finishing the bottle so as to result in the bottle configured to accept a closure."*

Claims 2 to 11 directly or indirectly refer to claim 1.

III. The following documents cited in the impugned decision are of relevance here.

D2: WO 2014/184450 A1
D3: US 5 718 352 A
D5: Advices of Despatch (D5a-D5c) and Invoices (D5d)
D7: Advice of Despatch and Reception certificate
D8: D8a and D8b: Wikipedia entry in French about Rexam
and Locations Map
D8c: Czech point, The Canmaker, Sayers Publishing
Group, July 2012
D13: Constellium, Always a step ahead, 2012
D21: Priority document of D2

IV. With the statement of grounds of appeal the appellant submitted the following documents:

D22: WO 01/15829 A1
D23: JP 2003-82429 A

V. In reply to the board's communication pursuant to Article 15(1) RPBA, the appellant submitted:

D22a: machine translation of D22

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

The requirements of Article 123(2) EPC were not fulfilled, since claim 1 was a tessellated compilation of features taken from different embodiments of the application as filed.

The requirements of Article 83 EPC were not fulfilled, since the ultimate tensile strength minus the tensile yield strength (UTS-TYS) of zero did not allow a bottle to be obtained. Therefore, the claimed invention could not be carried out across the whole scope of the claim.

Finding the appropriate aluminium sheets having a low (UTS-TYS) value that allowed a bottle to be produced placed an undue burden upon the skilled person.

The patent did not validly claim the priority, since the subject-matter of claim 1 was not directly and unambiguously derivable from the priority document. D2 was thus prior art under Article 54(2) EPC.

D2 anticipated the novelty of the subject-matter of claim 1. An expanding step was necessarily present. This was also clear from D3, D22 and D23.

The subject-matter of claim 1 was not novel over the public prior use as evidenced by D8, D7, D5 and D13 either.

Starting from D2, an expanding step would have been common practice and thus obvious.

Alternatively, D3 and D8(D8c) could be considered as the closest prior art. The problem to be solved could only be seen as the provision of an appropriate aluminium sheet for the production of a bottle. Selecting an aluminium sheet having suitable mechanical properties was a routine measure. Furthermore, the solution was obvious in view of D5 or D7.

VII. The arguments put forward by the respondent (the patent proprietor) are reflected in the reasoning below.

VIII. At the end of the oral proceedings of 20 March 2024, the requests were as follows.

The appellant (opponent 1) requests that the impugned decision be set aside and that the patent be revoked.

The respondent (patent proprietor) requests that the appeal be dismissed, alternatively that the patent be maintained in amended form on the basis of auxiliary request 6 submitted before the opposition division.

Opponent 2, which is a party as of right, did not make any submissions regarding the substance of the case.

Reasons for the Decision

Main request (labelled "auxiliary request 5" and found allowable by the opposition division)

1. Article 123(2) EPC

The requirements of Article 123(2) EPC are fulfilled for the following reasons.

The debate concerned the following features:

- A. the aluminum sheet has a thickness of 0.015 cm to 0.076 cm
- B. drawing and ironing the aluminum sheet to form an aluminum container having a dome;
- C. necking the aluminum container to reduce a diameter of a portion of the aluminum container by at least 26 % to form a bottle;
- D. expanding a section of the portion of the aluminum container having the reduced diameter; and
- E. finishing the bottle so as to result in the bottle configured to accept a closure.

Claim 1 of this request is based on claim 16 of the application as originally filed in combination with:

paragraph [0011], which further specifies the thickness of the aluminum sheet,

paragraph [0005], which further specifies that the container having a dome (first line of the paragraph) is a bottle and that forming includes drawing and ironing,

paragraph [0007], which indicates how the reduction of the diameter is realised.

Thus claim 1 now contains the specification of the features originally claimed in a broader sense, in combination, in claim 16.

In particular, the more specific features now contained in claim 1 have not been selected from among lists of alternatives. For instance, there is no disclosure of a specific container-forming step other than that of drawing and ironing. Also, there is no specific container other than a bottle, and there is no specific diameter reduction step other than the necking step. Furthermore, the feature according to which the reduction of the diameter is realised by necking implies that the product obtained is a bottle (paragraph [0013]), meaning that the "bottle" feature involves no separate selection. Furthermore it is evident, from the wording in paragraph [0005] "*an aluminium container has a dome*" and the subsequent description in that paragraph, that the container with a dome is the preferred embodiment. Consequently it is clear - without any unambiguity - that the bottle with a dome is the preferred option, especially since no other specific container is described anywhere in the description.

In addition, paragraph [0010] of the application as originally filed discloses that the method can also include expanding a section of the portion of the aluminium container having the reduced diameter, as also specified in claim 27 as originally filed. Furthermore paragraph [0026] of the application as originally filed discloses possible finishing steps. One possibility is to form the opening of the container to accept a closure.

Although the first part of paragraph [0026] only mentions a container to accept a closure, it is unambiguously clear from the disclosure that the bottle is the preferred container, as set out above. Moreover, the next part of paragraph [0026] refers, once again, to a bottle, thereby confirming that the bottle is definitely the preferred container. The appellant argued that the finishing step had been given a fresh meaning through the specification that the container was a bottle, because - according to the appellant- the opening would now be understood as an opening at the bottle neck. This argument is not convincing, because that understanding is merely the implicit consequence of the container being a bottle, which is implicit in claim 1 in the same way as it is implicit in paragraph [0026] in the context of a bottle.

Overall, there is no selection from several options, but instead only the detailing of the process steps disclosed for obtaining a bottle with an opening to accept a closure.

Therefore, the board concurs with the opposition division's conclusion that the subject-matter of claim 1 is directly and unambiguously derivable from the application as originally filed.

2. Article 83 EPC

Claim 1 relates to a method which comprises several steps. The result of the method is a bottle configured to accept a closure.

The skilled person reading claim 1 understands that the aluminium sheet defined in claim 1 by, *inter alia*, UTS-TYS has to be chosen in such a way that a bottle accepting a closure is obtained. Claim 1 does not contain any details about reject rates after finishing or about the quality of the bottle to be produced, but is simply aimed at the production of a bottle configured to accept a closure.

Although according to claim 1 no lower limit of UTS-TYS is specified, and UTS-TYS could thus theoretically be 0, such sheets are not encompassed by claim 1. Indeed, it is undisputed that they would be brittle and would not allow the production of a bottle accepting a closure.

It is accepted that the lower limit of UTS-TYS depends on the specific aluminium alloy chosen and the details of the process steps. However, the skilled person is able to choose the aluminium alloy sheet, process steps and consequently the lower UTS-TYS limit such that a bottle accepting a closure can be produced. At the very least, there is no evidence which would put this in doubt. The choice of aluminium sheet can only be made within the limits of the claim, which specifies the aluminium alloy type, the thickness of the sheet and the tensile yield strength. Even if the skilled person were not successful at the first attempt, in the absence of counter-evidence there is no reason to doubt that the skilled person could adjust the key parameters

within these limits in a few further attempts and arrive at the desired bottle accepting a closure. An undue burden cannot be recognised in the case in hand. Therefore, the lower UTS-TYS limit, albeit not clearly defined, is implicitly determined by the other features of the claim.

A lack of reproducibility of the claimed invention may become relevant on the basis of the requirements of inventive step or sufficiency of disclosure. If an effect is expressed in a claim, there is a lack of sufficient disclosure. If an effect is not expressed in a claim but is part of the problem to be solved, there will be an issue of inventive step - see G 1/03, Reasons 2.5.2. In the case at hand, the effect ("better reject rates after finishing") is not expressed in the claim, which means that it is not relevant to the question of sufficiency of disclosure.

Consequently, the board sees no reason to deviate from the opposition division's conclusion. The requirements of Article 83 EPC are fulfilled.

3. Article 87 EPC

A similar reasoning to that set out for Article 123(2) EPC applies. Claim 1 is based on page 2, lines 15 to 23, page 3, lines 10 to 12 and line 15, and page 4, lines 2 to 4, of the priority document US 2014 61986692. The method steps present in claim 1, which allow the formation of a bottle with a closure, are directly and unambiguously derivable from said passages. These cited passages do not concern unrelated embodiments, but instead describe preferred embodiments for the preparation of an aluminium bottle having a dome. Therefore, claim 1 validly claims priority from

the priority document, and the effective filing date in accordance with Article 89 EPC is 30 April 2014.

4. Article 54 EPC

The board concurs with the opposition division that the requirements of Article 54 EPC are met, for the following reasons.

- 4.1 D2 validly claims priority from D21. D2 is therefore prior art under Article 54(3) EPC. The main point of debate was whether or not D2 disclosed the steps of expanding a section of the portion of the aluminum container having the reduced diameter and finishing the bottle so as to result in the bottle configured to accept a closure.

D2 fails to disclose the expanding step. D2 discloses that edging is carried out so that the bottle can accept a lid (page 2, lines 27 and 28). There is no disclosure that this edging includes the expanding of the bottle neck. D2 also discloses curling of the bottle neck (page 3, lines 26 to 28). In particular, it discloses on page 15, line 16, that the bottle is configured to accept a closure and is subsequently curled. Even if it were accepted that the step of "finishing the bottle so as to result in the bottle configured to accept a closure" did not have to be the last step of the claimed method, it would still not be unambiguously disclosed that the curling step involved an expansion of a section of a portion of the bottle having the reduced diameter. Although curling may most commonly be obtained by outwardly folding part of the bottle neck, as shown in Figure 11 of D3, this is not the only option, as evidenced by Figure 14 of D3 (column 7, line 58).

Similarly, while it is certainly common to expand a portion of the neck to hold a tamper-evident ring, this is not mentioned in D2 and nor is it inevitable.

The appellant also argued that the threading operation involved expanding, as was supposedly clear from D3 (column 7, lines 18 to 38). While this may usually be the case, D3 itself acknowledges that threads can be formed using a variety of techniques (ibid.). Consequently, the availability of other ways of forming threads cannot be excluded, for instance those involving a reduction of the diameter or machining. D2 itself does not specify how the threading is carried out.

The question of admissibility of D22, D22a and D23 can be left unanswered, as the arguments based on those documents were not successful.

The fact that D22 and D23 are mentioned in D2 does not mean that all the process conditions of the first two documents apply to D2. At any rate, there is no indication on page 15, lines 14 to 17, of D2 that the finishing and curling of the bottle neck are realised as shown in D22 and/or D23. Even though it may be highly likely that this is the case and that curling is realised by outward folding, the question of whether or not a document is prejudicial to novelty cannot be decided on the basis of probability (see T 464/94, Reasons 16).

4.2 The appellant also argued that the subject-matter of claim 1 was not novel over the public prior use as evidenced by D8 (in particular D8c), D7, D5 and D13.

- 4.3 The question of whether the novelty objection based on the prior use of D8(D8a to D8c) with D5 should be admitted into the appeal proceedings does not need to be addressed, since the appellant's argument is not convincing anyway.

Even if it were accepted that D5 and D7 proved that the opponents delivered aluminium sheets as defined in claim 1 to Rexam for the production of fusion bottles, there would still be no proof that these sheets were ultimately used for the production of bottles using a process as described in D8c and that the combination of process and material was publicly known before the priority date of the patent. D13 is of no help in that respect, since the type of sheet is not mentioned on page 27 thereof.

5. Article 56 EPC

The appellant raised inventive-step objections based on D2, D3 and D8c as the closest prior art.

The priority of claim 1 being validly claimed, the objection based on D2 fails. Indeed, D2 is not prior art under Article 54(2) EPC and is thus not to be taken into consideration for the question of inventive step.

- 5.1 The invention relates to a method of manufacturing a bottle from aluminium sheet.

- 5.2 In agreement with the impugned decision, D3 is an appropriate closest prior art for the question of inventive step. It relates to the production of aluminium bottles such as the one shown in Figure 28 of D3. It is undisputed that D3 does not disclose UTS and

UTS-TYS of the aluminium sheet used in the production process.

- 5.3 The problem to be solved by the present invention is to reduce the reject rate of finished bottles (paragraph [0016]).
- 5.4 It is proposed to solve that problem by a method according to claim 1, characterised in that the aluminium sheet has a tensile yield strength (TYS) as measured in the longitudinal direction of 186-228 MPa and characterised in that the ultimate tensile strength (UTS) minus the tensile yield strength is less than 22.8 MPa.
- 5.5 The appellant has argued that the problem was not successfully solved, since very low UTS-TYS values also led to high reject rates and did not allow the problem to be solved.

The board is not convinced by the appellant's arguments. As indicated above for the question of sufficiency of disclosure, it is undisputed that very low UTS-TYS values, such as 0, are excluded by the wording of claim 1, since they do not allow the production of a bottle configured to accept a closure. First of all, therefore, the skilled person has to produce such bottles having a tensile yield strength (TYS) and UTS-TYS values in the claimed range. Once they have obtained such bottles, the skilled person can compare them to bottles made from a sheet having a UTS-TYS of 22.8 MPa or more. If this comparison shows that some of the bottles made according to claim 1 have higher reject rates than bottles having a UTS-TYS of 22.8 MPa or more, then the alleged problem could be considered as unsolved. However, such a comparison is

lacking in the case at hand. The only data available in that respect is the data present in the patent, which shows that bottles made from relevant sheets having a UTS-TYS of less than 22.8 MPa (and more than 20.6 MPa) have lower reject rates than bottles made from such sheets having a UTS-TYS of more than 22.8 MPa (see Figure 9). No evidence supports the appellant's contention that these results would differ if UTS-TYS was lower than the range depicted in Figure 9.

Consequently, the board has no reason to doubt that the problem has been successfully solved. There is no need to redefine the problem in less ambitious terms.

5.6 The solution is not obvious, for the following reasons.

It is accepted that the skilled person considered for the question of sufficiency is the same as the skilled person considered for the question of inventive step. However, in the first case, they have knowledge of the application as filed while, in the second case, they do not.

D3 is completely silent about the reject rates after finishing. There is no hint, for the skilled person, that UTS-TYS could be of importance in that respect.

Even if accepting that the aluminium alloy sheets of D5 and D7 were publicly available, this does not apply to the suitability of these sheets for a particular use, i.e. for the production of fusion bottles. Moreover, in any case, neither D5 nor D7 contains any indication about any benefits of these sheets and the role of UTS-TYS. There is no particular reason why the skilled person starting from D3 - which teaches bottles made from aluminium H-19 temper (column 9, line 50) - would

use aluminium H-14 temper from D5 or D7 with the expectation of lower reject rates. There is consequently no pointer, apart from hindsight, that would prompt the skilled person to use the aluminium sheets from D5 or D7 when trying to solve the problem posed.

5.7 The subject-matter of claim 1 and claims 2 to 11 depending thereon is consequently not rendered obvious when starting from D3 as the closest prior art.

5.8 The question of whether the inventive-step objection based on D8c is admissible under Article 12(4) and (6) RPBA can be left unanswered. It is undisputed that D8c fails to disclose UTS and UTS-TYS of the aluminium sheet used in the production process. D8c does not disclose the type of aluminium sheet used either. Therefore, the conclusion reached with respect to D3 as the closest prior art equally applies when starting from D8c. The subject-matter of claim 1 and claims 2 to 11 depending thereon is not rendered obvious when starting from D8c as the closest prior art either.

5.9 The requirements of Article 56 EPC are fulfilled.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairwoman:



C. Vodz

S. Besselmann

Decision electronically authenticated