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**Datasheet for the decision  
of 12 May 2021**

**Case Number:** T 1617/19 - 3.2.01

**Application Number:** 14198294.2

**Publication Number:** 2883645

**IPC:** B23K20/12

**Language of the proceedings:** EN

**Title of invention:**

Apparatus for and method of friction stir welding

**Patent Proprietor:**

The Boeing Company

**Opponent:**

AIRBUS / AIRBUS OPERATIONS /AIRBUS Operations GmbH  
/AIRBUS Operations S.L. /AIRBUS Operations Limited

**Headword:**

**Relevant legal provisions:**

EPC Art. 123(2), 100(b), 83, 111(1)

EPC R. 115(2)

RPBA 2020 Art. 15(3), 15(8)

**Keyword:**

Summons to oral proceedings - continuation of proceedings  
without duly summoned party

Amendments - extension beyond the content of the application  
as filed (no)

Sufficiency of disclosure - main request - enabling disclosure  
(yes)

Abridged reasons for decision - agreement with finding of  
department of first instance

Appeal decision - remittal to the department of first instance  
(yes)

**Decisions cited:**

G 0002/10

**Catchword:**



**Beschwerdekammern**  
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Case Number: T 1617/19 - 3.2.01

**D E C I S I O N**  
**of Technical Board of Appeal 3.2.01**  
**of 12 May 2021**

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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 22 March 2019  
revoking European patent No. 2883645 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

<b>Chairman</b>	G. Pricolo
<b>Members:</b>	S. Mangin
	P. Guntz

## **Summary of Facts and Submissions**

- I. The appeal was filed by the appellant (patent proprietor) against the decision of the Opposition Division to revoke the patent in suit (hereinafter "the patent").
- II. During the opposition proceedings, the opponent raised the grounds for opposition under Article 100(a) EPC (lack of inventive step), 100(b) EPC and 100(c) EPC.
- III. The Opposition Division held that although the invention was sufficiently disclosed, the subject-matter of the main request filed on 19 December 2018, and of all auxiliary requests, extended beyond the content of the application as filed contrary to the requirements of Article 123(2) EPC.
- IV. Oral proceedings were held before the Board on 12 May 2021 in the absence of the respondent (opponent) as announced with letter of 6 November 2020.
- V. The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained on the basis of the main request underlying the decision under appeal or, in the alternative, to maintain the patent in amended form on the basis of the first or second auxiliary request filed with letter of 29 March 2021, or on the basis of one of the 3rd to 37th auxiliary requests filed as 1st to 35th auxiliary requests with the statement of grounds of appeal.

The respondent (opponent) had requested in writing that the appeal be dismissed.

VI. Claim 1 of the main request underlying the appealed decision reads as follows:

A friction stir welding apparatus (202) comprising:  
a spindle housing (204);  
a pin tool (206) concentric with an axis (208) and rotatable relative to the spindle housing (204) about the axis (208);  
a first shoulder (210) not substantially rotatable relative to the spindle housing (204) about the axis (208), a second shoulder (212) not substantially rotatable relative to the spindle housing (204) about the axis (208),

wherein the first shoulder (210) and the second shoulder (212) are opposite to each other along the axis (208) and the pin tool (206) extends through the first shoulder (210) and the second shoulder (212);

characterized in that

the first shoulder (210) comprises planar contact portions arranged at a first angle relative to each other and oblique relative to the axis (208);

the second shoulder (212) comprises planar contact portions arranged at a second angle relative to each other and oblique relative to the axis (208); and

the axis (208) bisects the first angle at an apex thereof and bisects the second angle at an apex thereof.

VII. Claim 11 of the main request underlying the appealed decision reads as follows:

A method of joining at least two parts, the method comprising:

forming (2402) plasticized material at a joint interface (250) of the at least two parts by rotating a pin tool (206) of a friction stir welding apparatus

(202) relative to a spindle housing (204) of the friction stir welding apparatus (202) about an axis (208) concentric with the pin tool (206); and

confining the plasticized material between a first shoulder (210) and a second shoulder (212) of the friction stir welding apparatus (202), wherein

the first shoulder (210) and the second shoulder (212) are opposite to each other along the axis (208) and are not substantially rotatable relative to the spindle housing (204) about the axis (208),

characterised in that

the first shoulder (210) comprises planar contact portions arranged at a first angle relative to each other and oblique relative to the axis (208), the second shoulder (212) comprises planar contact portions arranged at a second angle relative to each other and oblique relative to the axis (208), and wherein the axis (208) bisects the first angle at an apex thereof and bisects the second angle at an apex thereof.

## **Reasons for the Decision**

1. Main request - Added subject-matter - Article 123(2) EPC

Contrary to the findings of the Opposition Division, the Board judges that the subject-matter of claim 1 of the main request does not extend beyond the content of the application as originally filed.

- 1.1 The appellant contested the findings of the Opposition Division that the below recited features a, b, and c of claim 1 added subject-matter that extended beyond the content of the application as originally filed:

- Feature a): "the first shoulder (210) comprises planar contact portions (...) the second shoulder (210) comprises planar contact portions(...)".
- Feature b): "the first shoulder (210) comprises planar contact portions arranged at a first angle relative to each other and oblique relative to the axis (208),  
the second shoulder (212) comprises planar contact portions arranged at a second angle relative to each other and oblique relative to the axis (208)".
- Feature c): "(...) the axis (208) bisects the first angle at an apex thereof and bisects the second angle at an apex thereof (...)".

1.2 The respondent was further of the opinion that the introduction of the below mentioned feature d) and the deletion of the below mentioned feature e) extended the claimed subject-matter beyond the content of the application as originally filed:

- Feature d): "wherein the first shoulder (210) and the second shoulder (212) are opposite to each other along the axis (208) and the pin tool (206) extends through the first shoulder (210) and the second shoulder (212)".
- Feature e): "wherein the pin tool (206) is rotatable relative to the first shoulder (210) and the second shoulder (212)".

1.3 The "gold standard" (G 2/10, OJ 2012, 376) for assessing compliance with Article 123(2) EPC is to be applied, according to which any amendment to the parts of a European patent application or of a European patent relating to the disclosure (the description, claims and drawings) is subject to the mandatory prohibition on extension laid down in Article 123(2) EPC and can therefore, irrespective of the context of



the amendment made, only be made within the limits of what a skilled person would derive directly and unambiguously, using common general knowledge, and seen objectively and relative to the date of filing, from the whole of these documents as filed. After the amendment the skilled person may not be presented with new technical information.

1.4 Introduction of feature a): "The first shoulder (210) comprises planar contact portions (...) the second shoulder (210) comprises planar contact portions(...)".

1.4.1 The Opposition Division held that the introduction of feature a) without the introduction of the third and fourth contact portions led to an unallowable intermediate generalisation contrary to the requirements of Article 123(2) EPC.

Referring to the third paragraph of page 17, the third and fourth paragraphs of page 18 and the first paragraph of page 19 of the application as filed (corresponding to paragraphs [0045] and [0048]-[0050] of the A1-publication), the respondent added that the application did not disclose that the first and the second shoulders comprised planar contact portions. Furthermore the planar contact portions of the shoulders could not be deduced from the complementarity of the contact portions of the shoulders with the joint interface surfaces, which were not defined in claim 1.

1.4.2 The Board concurs with the appellant that the introduction of feature a) does not present the skilled person with new technical information going beyond the application as filed as a whole.

Feature a) finds basis in the application as filed (references are made to the A1 publication):

- Figures 5, 6 and 10-13 depict shoulders comprising planar contact portions.
- Paragraphs [0027] discloses that the joint interface surfaces (258, 260) may include substantially planar portions and paragraphs [0045] and [0098] disclose that the first and second contact portions (254, 256) may be complementary to the first and second joint interface surfaces respectively (258, 260). As a result of these two teachings, the skilled person derives that the first and second shoulder (210) may include planar contact portions. The fact that the joint interfaces are not defined in claim 1, is not relevant, and is actually appropriate as claim 1 is directed to the friction stir welding apparatus and not to the workpieces to be joined, which are not part of the apparatus.

Furthermore introducing that the first and second shoulders comprise planar portions without introducing the third and fourth contact portions between the planar portions of the first and second shoulder respectively does not lead to an unallowable intermediate generalisation, as this amendment does not present the skilled person with new technical information.

- Firstly, it is to be noted that defining the third and fourth contact portions between the planar portions, in the absence of further details thereof, would not provide further technical information.
- Secondly, as the planar portions are arranged at an angle relative to each other and oblique relative to the axis of the pin tool in claim 1, there will be a discontinuity between the two planar surfaces: either an edge, if the planar surfaces extend until they reach

each other, or a planar or non-planar surface, if the planar surfaces do not extend up to the axis of the pin tool.

- Thirdly, while the figures depict three possibilities for the portion between the two planar portions: an edge (figure 4, [0065]), a smoothly contoured or radiused surface (figure 3 and [0049]) or a flat planar surface (second shoulder of figure 13, [0067] and [0068]), the application as originally filed is not limited to these three specific possibilities. Indeed paragraphs [0057] and [0058] disclose that the third and the fourth contact portions may have a shape selected to form a fillet contour in the joint interface of a desired shape.

- Fourthly, while the planar contact portions are designed to be complementary to the shape of the workpieces, the surface between the two planar portions are designed in view of the desired shape of the fillet of the joint (reference is made to the last sentence of paragraph [0049], paragraphs [0057]-[0058], [0097]-[0098], [0104]-[0106]). These two aspects of the shoulders (the planar portions and the portion in-between) have therefore technical requirements and functions that are different and independent of each other and are consequently not inextricably linked. There is accordingly no unallowable intermediate generalisation.

1.5 Feature b): "the first shoulder (210) comprises planar contact portions arranged at a first angle relative to each other and oblique relative to the axis (208); the second shoulder (212) comprises planar contact portions arranged at a second angle relative to each other and oblique relative to the axis (208)".

- 1.5.1 The Opposition Division held that the introduction of feature b) based on figures 5, 6 and 10-13 without the introduction of the special relationship between the first and the second angle, being either the same or complementary, led to an unallowable intermediate generalisation contrary to the requirements of Article 123(2) EPC.

The respondent added that neither the description nor the drawings disclosed the angles between the planar contact portions of the shoulders. The figures only showed the axis 208 of the pin and the angles 264 and 265 representing the angles formed by the joint pieces to be friction stir welded.

- 1.5.2 The Board does not agree with the arguments of the Opposition Division and of the respondent and judges that the introduction of feature b) in claim 1 does not present the skilled person with new technical information.

While the angles 264 and 265 define the angles between the joint interface surfaces, the skilled person derives from the application as filed (paragraphs [0045] and [0098] of the A1-publication) that they are identical to the angles made by the planar contact portions of the first shoulder and second shoulder respectively as the planar portions of the shoulders are complementary to the joint interface surfaces.

The first and second contact portions being mutually complementary or mutually symmetric are only defined in dependent claims 8 and 9 of the application as originally filed, defining thereby these features as optional implementations.

Furthermore, while figures 5-6 and 10-13 disclose complementary or symmetric shoulders, the application as originally filed is not limited to these two implementations. Considering the description, the skilled person is taught that the angles of the two planar portions of the first shoulder and the second shoulder are generally not dependent on each other but are dependent on the shape of the joint workpieces. Reference is made to the last sentence of paragraphs [0045] and [0052], where the angles 264 and 265 are presented as being related to the first and second shoulder respectively.

As a result taking into consideration not just the figures, but the application as a whole, the angles between the planar portions of the first shoulder and of the second shoulder are not limited to being the same or complementary.

1.6 Feature c): "(...) the axis (208) bisects the first angle at an apex thereof and bisects the second angle at an apex thereof (...)"

1.6.1 The Opposition Division held that feature c) was not directly and unambiguously disclosed in figures 5, 6 and 10-13 for the following reasons:

- (i) The figures 5, 6 and 10-13 were schematic drawings whereas the term "bisect" had a very precise meaning.
- (ii) The axis 208 ran within the pin tool, such that it could not bisect the first and second angles at an apex thereof.
- (iii) In the event that the shoulders had a flat or rounded third and fourth contact portion, a virtual apex had to be construed.
- (iv) Claim 1 did not recite the view of the figures from which feature c) is taken; i.e. feature c) did not

recite "when seen in a front view of a friction stir welding apparatus".

(iv) The figures 5, 6 and 10-13 represented front views of the apparatus, with no clear indication whether the planar contact portions lied orthogonal to the drawing planes.

(v) The skilled person would understand that it was not essential for the functioning of the friction stir welding tool that the axis of the pin tool bisected the first and the second shoulders.

1.6.2 The Board does not agree with the above argumentation. Feature c) is directly and unambiguously derivable from figures 5, 6 and 10-13 as well as figure 16. While these figures may be schematic, they clearly depict the axis 208 of the pin tool 206 bisecting (splitting in half) the first angle of the first shoulder and the second angle of the second shoulder. While the first and the second angles between the two planar contact portions of the first and second shoulders may not be materialised, if the angles are rounded or flattened, these angles are still present geometrically. Similarly the axis 208 of the pin 206 is not materialised but is a defined geometrical feature. The front views depicted on figures 5-6 and 10-13 are symmetrical along the axis 208 and clearly show the axis 208 bisecting the angles 264 and 265 of the joint interfaces, corresponding to the angles between the planar portions of first and second shoulders.

Furthermore, figures 5-6 and 10-13 are front views of a part of the friction stir welding apparatus, whereby all the lines lie orthogonal to the drawing plane. The skilled person would not interpret it in any other ways especially in view of the three-dimensional view of figures 14-16 and 19-20. On these figures, and in

particular figures 19 and 20, the axis of the pin tool 208 is orthogonal to the axis of the joint interface 1906.

Claim 1 not making a reference to the "front view of the friction stir welding apparatus" does not lead to added subject-matter. While the axis (208) bisecting the first angle and the second angle at their respective apex may only be recognised by the skilled person on the front view of the apparatus, the fact that the axis (208) bisects the first angle and the second angle is present independently of the view of the apparatus.

Finally the fact that feature c) is not essential for the invention is not a criterion for determining whether this feature is directly and unambiguously derivable from the application as originally filed. The relevant criterion is whether the skilled person is provided with new technical information by the introduction of feature c), which is not the case as explained above.

- 1.7 Feature d): "wherein the first shoulder (210) and the second shoulder (212) are opposite to each other along the axis (208) and the pin tool (206) extends through the first shoulder (210) and the second shoulder (212)".
- 1.7.1 The respondent held that the application as originally filed did not disclose that the pin tool extended through the first and second shoulders without extending through the workpieces. Reference was made to lines 26-28 of paragraph [0052], lines 3-5 of paragraph [0055], lines 11-13 of paragraph [0061], lines 30-32 of

paragraph [0063] and lines 3-5 of paragraph [0066] of the A1-publication.

- 1.7.2 The Board judges that this amendment does not introduce added subject-matter that extends beyond the application as originally filed.

Paragraph [0004] of the A1-publication discloses: "The first shoulder and the second shoulder are opposite to each other along the axis and are not substantially rotatable relative to the spindle housing about the axis".

Furthermore, figure 5, paragraph [0055] of the A1-application, figure 6, paragraph [0052], figure 11, paragraph [0061], figure 12, paragraph [0063] and figure 13, depict and literally disclose that "the pin tool 206 extends through the first shoulder 210 and the second shoulder 212".

Claim 1, as originally filed, is directed to a friction stir welding apparatus and is defined in terms of apparatus features. The omission of the features related to the workpieces to be friction stir welded, which are not part of the apparatus, insofar as they are not needed to specify features of the apparatus by reference to the intended use (functional definition), as in the present case, does not lead to new technical information.

- 1.8 Deletion of feature e): "wherein the pin tool (206) is rotatable relative to the first shoulder (210) and the second shoulder (212)".

The respondent held that the wording of claim 1 suggested that the first and the second shoulders were not necessarily structurally blocked in rotation with respect to the housing, whereby the application as filed consistently disclosed that the shoulders were



blocked in rotation and that the pin tool rotated relative thereto. In fact, the shape of the workpieces could be preventing the shoulders from rotating (possibility disclosed in paragraph [0024] of the A1-publication), but there was no reference to the workpieces to be joined in claim 1. It was clear that feature e) was introduced for clarifying the meaning of the term "substantially" in the expression "a first shoulder (210) not substantially rotatable relative to the spindle housing (204) about the axis (208)" and "a second shoulder (210) not substantially rotatable relative to the spindle housing (204) about the axis (208)", in order to confirm that the shoulders did not rotate during the operation of friction stir welding.

The Board does not agree with the respondent. The deletion of feature e) does not provide the skilled person with new technical information.

Indeed, the following features of claim 1 imply that the pin tool is rotatable relative to the first and second shoulders:

- a pin tool (206) concentric with an axis (208) and rotatable relative to the spindle housing (204) about the axis (208);
- a first shoulder (210) not substantially rotatable relative to the spindle housing (204) about the axis (208); and
- a second shoulder (212) not substantially rotatable relative to the spindle housing (204) about the axis (208).

Therefore, feature e) is still implicitly defined in claim 1.

The fact that the expression "not substantially rotatable" is used is not linked to whether the shape

of the workpieces prevents the rotation of the shoulders. The term "substantially" in the expression a "shoulder not substantially rotatable" is to be interpreted as a shoulder not rotatable within the technical tolerance of such apparatus.

- 1.9 The above argumentation regarding the friction stir welding apparatus of claim 1 applies mutatis mutandis to the method of claim 11. Claim 11 relates to a method of joining at least two parts, and specifically refers to the use of a friction welding apparatus having the features of claim 1. Hence, similarly to claim 1, the subject-matter of claim 11 does not extend beyond the content of the application as filed.
- 1.10 Regarding the dependent claims, and in particular claims 5-10 and 16 and the reference to "the first contact portion" and the "second contact portion"
  - 1.10.1 There is no need to discuss the respondent's objections of added subject-matter in respect of the dependent claims, as they are solely related to the amendments made to the independent claims from which they depend and which are found allowable as explained herein above.
  - 1.10.2 The Opposition Division noted (see the last paragraph of point 3.1.4 of the decision under appeal) that dependent claims 5-10 and 16 "*further defined features of the first contact portion and the second contact portion with the meaning of the entire contact surface*". As the meaning of contact portion had however changed during examination proceedings, the subject-matter of claims 5-10 and 16 accordingly also changed. In particular claim 7 defined a first contact portion that was non-planar.

Dependent claims 5 and 16 refer to the first and second shoulders including a "first contact portion" and a "second contact portion", respectively. Dependent claims 6 to 10 refer to said first and second contact portions of claim 5. Independent claims 1 and 11 do not refer to "first and second contact portions" but refer to the first and second shoulders including "planar contact portions". Hence, there has been no change in what first and second contact portions means as compared to the disclosure in claims 5-10 and 16 of the application as filed.

2. Main request - Sufficiency of disclosure - Articles 100(b) and 83 EPC
  - 2.1 In accordance with Article 15(8) RPBA 2020, the reasons for the present decision are given in abridged form for those issues in respect of which the Board agrees with the findings of the Opposition Division.
  - 2.2 The respondent's submissions in appeal proceedings concerning sufficiency of disclosure of claim 1 correspond entirely to those made during opposition proceedings (compare section C of the notice of opposition with section C of the reply to the statement of grounds of appeal).
  - 2.3 The Board herewith confirms the preliminary opinion expressed in the communication accompanying the summons to oral proceedings (point 2), according to which the Opposition Division's findings on the issue of sufficiency of disclosure regarding claim 1 can be followed. Reference is made to the reasoning under point 2 on page 3 of the appealed decision which is adopted by the Board as its own. Accordingly, the ground of opposition pursuant to Article 100(b) EPC in

combination with Article 83 EPC does not hold against claim 1 of the main request.

- 2.4 Regarding the sufficiency of disclosure of the invention as defined in claims 5 and claims 6-10 dependent on claim 5 as well as in claim 16, the respondent argued that the introduction of the "first contact portion" and the "second contact portion", without any link to the defined "planar contact portions" in claim 1 and claim 11 accentuated the contradiction between the claims and the description.
- 2.5 However, this is rather an issue of clarity rather than sufficiency of disclosure. The respondent did not provide any reasons why the skilled person would be unable to execute the invention, in particular why the skilled person would be prevented from providing shoulders according to claim 1 including the first and second contact portions and comprising planar contact portions. In order to establish insufficiency of disclosure in inter partes proceedings, it is established case law that the burden of proof is upon an opponent to establish, on the balance of probabilities, that a skilled person reading the patent, using his common general knowledge, would be unable to carry out the invention. Merely stating that the contradiction between the claims and the description is accentuated does not provide with any reasons why the skilled person should be unable to carry out the invention. The Board comes therefore to the conclusion that the invention as further defined in claims 5-10 and 16 is sufficiently disclosed.
3. Remittal to the Opposition Division for further prosecution - Article 111(1) EPC

With the grounds of appeal (page 17), the appellant requested remittal of the case to the Opposition Division for consideration of inventive step (Article 56 EPC) should the amendments to the main request be considered allowable. The appellant was of the view that the complexity of the issues involved, would place an undue burden on the parties to try these issues for the first time in appeal.

Similarly, the respondent required with the reply to the grounds of appeal (point 4 on page 39) remittal of the case to the Opposition Division for consideration of the other grounds, should the Board consider that the amendments do not contravene Article 123(2) EPC.

Under these circumstances that provide special reasons in the sense of Article 11 RPBA 2020 the Board decided to make use of its discretion to remit the case to the Opposition Division for further prosecution (Article 111(1) EPC).

## **Order**

### **For these reasons it is decided that:**

1. The decision under appeal is set aside.
2. The case is remitted to the Opposition Division for further prosecution.

The Registrar:

The Chairman:



A. Vottner

G. Pricolo

Decision electronically authenticated