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**Datasheet for the decision
of 14 July 2022**

Case Number: T 1754/19 - 3.2.03

Application Number: 15156813.6

Publication Number: 2913121

IPC: B22C1/00, B22C9/10, B22C21/14

Language of the proceedings: EN

Title of invention:
Core assembly including studded spacer

Patent Proprietor:
Raytheon Technologies Corporation

Opponent:
Safran Aircraft Engines

Headword:

Relevant legal provisions:
EPC Art. 56, 69(1)
EPC R. 103(1) (a), 111(2)
RPBA Art. 12(4)

Keyword:

Late-filed requests - requests could have been filed in first instance proceedings (no)

Inventive step - (no)

Appealed decision - substantial procedural violation (no) - reimbursement of appeal fee (no)

Decisions cited:

Catchword:



Beschwerdekammern

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Case Number: T 1754/19 - 3.2.03

D E C I S I O N
of Technical Board of Appeal 3.2.03
of 14 July 2022

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
5 April 2019 concerning maintenance of the
European Patent No. 2913121 in amended form.**

Composition of the Board:

Chairman B. Miller
Members: G. Patton
D. Prietzel-Funk

Summary of Facts and Submissions

- I. European patent No. 2 913 121 B1 (hereinafter "the patent") relates to a core assembly for a casting system for manufacturing a part.
- II. An opposition was filed against the patent as a whole and was based on Article 100(a) EPC (lack of inventive step) and Article 100(b) EPC (insufficiency of disclosure).

The opponent lodged an appeal against the Opposition Division's decision maintaining the patent on the basis of the then-patent proprietor's main request.

- III. The Board provided its preliminary, non-binding opinion to the parties in a communication pursuant to Article 15(1) RPBA 2020 annexed to the summons to oral proceedings.
- IV. At the end of the oral proceedings held on 14 July 2022 the patent proprietor withdrew auxiliary requests 2 to 5 and 7 then on file, and the final requests of the parties were as follows:

The opponent (hereinafter "appellant") requested that the decision under appeal be set aside and that the patent be revoked in its entirety. It also requested that auxiliary requests 1 and 6 submitted with the reply to the statement setting out the grounds of appeal not be admitted into the proceedings, and also that the appeal fee be reimbursed.

The patent proprietor (hereinafter "respondent") requested that the appeal be dismissed, or

alternatively that the patent be maintained in amended form on the basis of one of auxiliary requests 1 or 6 submitted with the reply to the statement setting out the grounds of appeal.

V. Claim 1 of the **main request** reads as follows, with the feature lettering added by the Board:

- (a) A core assembly (84; 184) for a casting system, comprising:
- (b) a core (86; 186; 586) that includes a body and at least one hole (94; 194; 594) formed through said body; and
- (c) a spacer (92; 192; 292; 392; 492; 592-1)
- (d) that extends through said at least one hole (94; 194; 594),
- (e) said spacer (92; 192; 292; 392; 492; 592-1) including a stud portion (96; 196; 296; 396; 496; 596)
- (f) and a chaplet portion
- (g) configured (98; 198; 298; 398; 498; 598) to abut a surface (91; 191) of said body that circumscribes said at least one hole (94; 194; 294),
- (h) wherein said core (86) is assembled to a second core (88)
- (h') or a shell
- (i) and is spaced from said second core (88) or said shell by a second spacer (92-3)
- (j) received in a recess (75) of said second core (88-1).

With respect to claim 1 of the main request, claim 1 of **auxiliary request 1** further comprises the following feature at the end of the claim:

- (k) ", and wherein the stud portion contacts the

second core or shell"

Claim 1 of **auxiliary request 6** reads as follows, with the feature lettering added by the Board:

- (a) A core assembly (84; 184) for a casting system, comprising:
- (b) a core (86; 186; 586) that includes a body and at least one hole (94; 194; 594) formed through said body; and
- (c) a spacer (92; 192; 292; 392; 492; 592-1)
- (d) that extends through said at least one hole (94; 194; 594),
- (e) said spacer (92; 192; 292; 392; 492; 592-1) including a stud portion (96; 196; 296; 396; 496; 596)
- (f) and a chaplet portion
- (g) configured (98; 198; 298; 398; 498; 598) to abut a surface (91; 191) of said body that circumscribes said at least one hole (94; 194; 294),
- (h) wherein said core (86; 186; 586) is assembled to a second core (88; 188)
- (i') and is spaced from said second core (88; 188) by a bumper (93),
- (k') and wherein the stud portion contacts the second core.

VI. The following documents considered in the opposition proceedings are relevant to the present decision:

D1: EP 2 471 613 A2

D2: GB 2 281 238 A

D3: FR 2 874 187 A1

VII. As far as is relevant to the present decision, the appellant essentially argued as follows:

Main request - inventive step

Starting from D2 as the closest prior art for claim 1 of the main request, the only distinguishing features were features (b) and (d). The problem to be solved derived on the basis of these could be formulated as being to reduce the risk of losing a spacer during handling of the core assembly before injection of the wax. D3 disclosed the claimed solution, and the skilled person would immediately think of implementing it in the core assembly of D2, thereby arriving at the subject-matter of claim 1 in an obvious manner.

There was no teach away in D2 for the implementation of the solution disclosed in D3. Furthermore, the stud portion (10) of the spacer in D3 was mounted as a close fit in the hole (121C) of the core, as in D2.

Auxiliary requests 1 and 6 - admittance

The features introduced in claims 1 of auxiliary requests 1 and 6 were taken from the description and had never been discussed in the opposition proceedings. Thus auxiliary requests 1 and 6 should not be admitted into the appeal proceedings.

Auxiliary request 1 - inventive step

Feature (k) introduced in claim 1 of auxiliary request 1 was a further distinguishing feature over D2 taken as the closest prior art. On the basis of the distinguishing features (b), (d) and (k), the problem to be solved was to provide an alternative solution.

No incentive in D2 was required for the skilled person to look for a solution to this problem. They would come across D3 and would immediately think of implementing the solution disclosed therein in the core assembly of D2. In so doing they would encounter no technical difficulties and would arrive at the claimed subject-matter in an obvious manner.

Auxiliary request 6 - inventive step

D2, taken as the closest prior art for claim 1 of auxiliary request 6, did not disclose that the core was spaced from said second core by a bumper (feature (i')), in addition to distinguishing features (b), (d) and (k') already discussed for claim 1 of auxiliary request 1.

D1, paragraph 10 in combination with paragraph 35 and figure 18 disclosed the claimed solution (i').

The skilled person, facing the problem of providing easier spacing of the cores derived in view of feature (i'), would immediately think of applying the solution disclosed in D1 to the core assembly of D2. As a result, feature (i') could not justify inventive step, and hence the subject-matter of claim 1 lacked inventive step.

Substantial procedural violation

The Opposition Division had not considered, let alone dealt with, the appellant's argument that the technical effect would not be obtained over the whole scope claimed.

Moreover, the reasoning of the impugned decision was based on passages of the contested patent which did not relate to the distinguishing features.

The reasoning of the impugned decision contravened Rule 111(2) EPC, resulting in a substantial procedural violation justifying reimbursement of the appeal fee.

VIII. As far as is relevant to the present decision, the respondent essentially argued as follows:

Main request - inventive step

D2 taken as the closest prior art for claim 1 of the main request did not disclose features (b) and (d). The objective technical problem on the basis of these was to provide improved spacing between the cores. The problem set by the appellant, to reduce the risk of losing a spacer during handling of the core assembly before injection of the wax, derived from maximising the contact between the stud portion and the core, was not allowable since it contained pointers towards the solution.

Taking the problem formulated by the appellant, the skilled person would not turn to D3, since the spacing system of three distinct parts as disclosed therein was less accurate than that of D2.

Furthermore, the skilled person would not think of including the solution of D3 of longer platinum stud portions in D2 since they would realise that the properties of the cast nickel-based superalloy could be adversely affected by including a larger amount of platinum in its composition.

D3, figures 2, 3 and 4, disclosed that the stud portion (10) was mounted as a loose fit into the hole (121C) of the core (121), contrary to D2, which explicitly disclosed that the stud portion (22) was mounted as a close fit into the hole (16), see page 6, lines 1-6. Thus the arrangement disclosed in D3 for holding the spacer did not provide a solution for the underlying problem as formulated by the appellant. As a result, the skilled person faced with said problem would not consider implementing the solution of D3 in the core assembly of D2.

Hence the subject-matter of claim 1 of the main request was inventive.

Auxiliary requests 1 and 6 - admittance

There was no reason to file auxiliary requests 1 and 6 during the opposition proceedings. The filing of requests in opposition proceedings had been limited to the minimum required for reasons of conciseness and efficiency. Auxiliary requests 1 and 6 were filed at the earliest possible moment in the appeal proceedings. Thus they should be admitted into the proceedings.

Auxiliary request 1 - inventive step

Feature (k) introduced in claim 1 of auxiliary request 1 was a further distinguishing feature over D2 taken as the closest prior art. On the basis of distinguishing features (b), (d) and (k), the problem to be solved was to provide an alternative solution.

The skilled person would have no motivation to modify the arrangement of D2 and implement that of D3.

Thus inventive step should be acknowledged for the subject-matter of claim 1 of auxiliary request 1.

Auxiliary request 6 - inventive step

In the light of claim 9 of the patent the skilled reader would immediately realise that a "bumper" according to claim 1 of auxiliary request 6 could not be the same as a "second spacer" as in claim 1 of auxiliary request 1. According to the patent, a bumper was formed on the core, i.e. attached to the surface of the core.

As D2 did not disclose such a bumper, this was a distinguishing feature of claim 1 of auxiliary request 6 over D2 taken as the closest prior art.

Unlike a spacer, a bumper could not fall out of its hole during handling of the core as it was attached to the core. Hence the problem to be solved had to be reformulated, taking into account this effect linked to the use of a bumper, as being to provide a casting system having easier spacing of the cores.

Since none of the cited prior art, including D1, disclosed a bumper within the meaning of the patent, inventive step had to be acknowledged.

Reasons for the Decision

1. Main request - inventive step

The appellant contests that the subject-matter of claim 1 of the main request involves an inventive step

starting from D2 in combination with the teaching of D3.

The Board shares the parties' view that D2 can be selected as the closest prior art for claim 1 of the main request since it too relates to a core assembly for a casting system for manufacturing a part (see for instance claim 1).

1.1 Disclosure of D2 - distinguishing features

The Board also shares the parties' view that D2, page 5, line 34 to page 6, line 15, page 7, lines 6 to 18, page 8, lines 15 to 25 and figures 1 and 2, discloses all the features of claim 1 except features (b) and (d):

- (b) a core that includes a body and at least one hole formed through said body; and
- (d) a spacer that extends through said at least one hole.

As a matter of fact, figures 1 and 2 of D2 show blind holes ("hole" 16) in the body of the core (10, 11) and there is no direct and unambiguous disclosure in the description of D2 of at least one hole (16) formed **through the body** of the core (10, 11). The spacer ("chaplet" 18, 18a) in D2 does **not extend through** said at least one hole (16).

1.2 Technical effect(s) - problem(s) to be solved

The Board is not convinced by the respondent's proposed objective technical problem to provide an improved spacing between the cores due to the lack of explanation as to why and how the distinguishing

features were related to the technical effect or, at least, where this technical information could be derived from the available documents, e.g. the patent. Improving spacing between the cores is vague and is not related to the distinguishing features as such, and may *de facto* relate to any available spacer.

The respondent contests the objective technical problem put forward by the appellant of how to maximise the contact between the stud portion and the core, arguing that it comprises a pointer towards the solution.

The Board does not share the respondent's view since the distinguishing features are not mentioned in the proposed problem to be solved, which instead focuses on their technical effect.

At any rate, the Board concurs with the appellant's more general problem to be solved **to reduce the risk of losing a spacer during handling of the core assembly before injection of the wax**, which can also be seen as an immediate consequence of the technical effect of maximising the contact between the stud portion and the core.

1.3 Obviousness - in view of the teaching of D3

D3, page 6, lines 4 to 15 and figure 3 discloses a central core ("noyau central" 121) that includes a body and at least one hole ("trous traversants" 121C) formed through said body and a spacer comprising a stud portion ("éléments tiges" 10) that extends through said at least one hole (121C). The length of the stud portion (10) is such that it contacts a second core ("noyau intrados" 125) and a third core ("noyau extrados" 123). The spacer further comprises chaplet

portions ("entretoises" 15) which are placed between the cores (121, 123, 125) in order to set the distance between the central core (121) and each of the second and third cores (123, 125), respectively. The spacer of D3 is made up of three parts, a rod (10) and two wax spacers (15).

The respondent argues that the spacing system of D3 is less accurate in the relative positioning of the cores than that of D2, so the skilled person would not turn to D3.

The Board does not share this view since D3 (see page 1, lines 1 to 4 and claim 1) lies in the technical field of core assemblies for a casting system, like the patent and D2. Hence the skilled person would inevitably come across D3 and consider its teaching when faced with the above-mentioned technical problem. By doing so, they would find the claimed solution and would encounter no technical difficulties in implementing it in the core assembly of D2. In particular, as taught in D3, they would extend the stud portion (22) of the spacer (18) in figure 2 of D2 through the body of the core (10) until it contacts the second core (11), *de facto* providing a spacer between the die (12) and the second core (11) in addition to those already in place (18a) between the cores (10, 11).

Thereby, the skilled person would arrive at the claimed subject-matter in an obvious manner.

1.4 The respondent further argued in its late-filed written submission submitted after receipt of the summons to oral proceedings before the Board that the skilled person would not consider including longer stud

portions of platinum chaplets in D2 since they would risk adversely affecting the properties of the cast nickel-based superalloy by a larger amount of platinum in its composition. The respondent referred to page 7, second full paragraph of D2, which stated that "*relatively small quantity of platinum used for the chaplets has no significant adverse effect on the metallurgical, physical and chemical properties of the nickel-based superalloy*". Hence the skilled person would not extend the chaplets all the way through the core as taught in D3 as this would have the consequence of introducing more platinum into the superalloy, which could adversely affect its properties. D2 thus taught away from the claimed solution.

- 1.5 The Board does not share this view for the reasons put forward by the appellant in its letter filed in response to the respondent's late-filed submission.

Should the stud portion (22) in figure 2 of D2 be extended up to the surface of the second core (11) as taught in figure 3 of D3, the amount of platinum metal dissolved in the superalloy would still remain small so as not to adversely affect the properties of the cast superalloy.

In this respect, reference is made to the last sentence of page 2 of D2: "*In practice, platinum is **not** known to adversely affect the properties of the superalloy*" (emphasis added by the Board). This statement is also in line with the disclosure on page 7, second paragraph of D2 cited above, contrary to the respondent's view. As a consequence, the Board does not consider that D2 comprises a teach away for implementing the solution disclosed in D3.

1.6 At the oral proceedings before the Board, the respondent submitted for the first time in the proceedings that D3 disclosed that the stud portion (10) was mounted as a loose fit into the hole (121C) of the core (121) according to figures 2, 3 and 4. In figure 2 a space was shown between the stud portion (10) and the hole (121C). This space was clearly filled in with wax (16) in figures 4 and 5 as said space was hatched in the same manner as the spaces between the cores (121, 123, 125), the latter being unambiguously filled with wax. This interpretation of the figures was further confirmed by the fact that no space was shown between the pins (12) and the wax (16), or the pins (12) and the die (17) in figures 4 and 5, respectively, where a close fit is intended. For the respondent there was no disclosure in the description of D3 going against this interpretation of the figures. Hence the skilled person would have had no reason to interpret the disclosure of the figures otherwise than as a loose fit connection of the stud portion (10) in the hole (121C).

D2, on the contrary, explicitly disclosed that the stud portion (22) was mounted as a close fit in the hole (16), see page 6, lines 1 to 6.

Should the problem to be solved be that of reducing the risk of losing a spacer during handling of the core set before injection of the wax, the solution of D3 of a stud portion positioned in a loose fit for holding the spacer would have a worsening effect on the handling of the core assembly compared to that of D2 of a stud portion positioned in a close fit. The skilled person would therefore not consider implementing the solution disclosed by D3 in the core assembly of D2.

1.7 The Board does not share the respondent's view for the following reasons discussed at the oral proceedings:

Contrary to the respondent's allegation, there is a clear teaching in D3 that the stud portion (10) is extended as a close fit into the hole (121C) of the core (121). The characterising portion of claim 1 of D3 refers to the previously defined step of assembling the cores ("l'assemblage des noyaux"), see page 9, lines 8 to 9. The core assembly step takes place before injection of the wax. Claim 1 specifies that the mounting of the stud portion ("éléments de calage" 10) in the hole (121C) is performed by flush mounting ("par encastrement"), i.e. implying friction, see also page 3, lines 16 to 18 of D3. The flush mounting of D3 is considered by the Board as being a close-fit mounting as in D2.

Figures 2, 3 and 4 of D3 do not contradict this explicit disclosure of claim 1 and the description of D3 for the reason that they are purely schematic. The Board holds the view that it cannot be excluded that the hatching of the space between the stud portion (10) and the hole (121C) is an artefact as often occurs when drawing figures using computer software, especially when the drawings are intended to be schematic. There is no such disclosure of a space to be filled in by wax between the stud portion (10) and the hole (121C) in the description or the claims of D3, as the respondent also admits. The disclosure of D3 actually goes against the interpretation of the schematic figures presented by the respondent.

Concerning the lack of space between the pins (12) and the wax (16) and between the pins (12) and the shell (17) in figures 4 and 5, respectively, the Board notes

that the mounting of the pins (12) is performed differently from that of the stud portion (10) into the holes (121C). The pins (12) are indeed simply introduced into the wax (16), see paragraph bridging pages 6 and 7 ("*en incorporant...sous la forme de tiges ou de picots de platine 12 dans la couche de cire*"). The pins (12) are embedded in the shell (17) when making the shell (17), see first full paragraph of page 7 ("*Lors de la fabrication du moule carapace 17 les différentes couches...autour des seconds éléments 12*"). In neither case are holes necessary for incorporating the pins (12), so there is no need to form holes in the wax (16) or in the shell (17) surrounding the pins (12), contrary to figure 2 with respect to the holes (121C) in the core (121).

Hence the allegations made by the respondent of a worse solution disclosed in D3 compared with that of D2 are not convincing.

Since the late-filed argument is not convincing and does not change the Board's preliminary opinion on lack of inventive step (see points 1.1 to 1.6 above), the debatable admission of the late-filed argument by the respondent can be left open.

- 1.8 In view of the above, the subject-matter of claim 1 lacks inventive step starting from D2 in combination with the teaching of D3 (Article 56 EPC).

It is emphasised that the reasoning given in the impugned decision, pages 9 and 10, inverts the combination of the teachings of D2 and D3, and hence is not relevant.

2. Auxiliary requests 1 and 6 - admittance

2.1 Auxiliary requests 1 and 6 were filed with the reply to the statement setting out the grounds of appeal. Hence their admittance into the proceedings is subject to Article 12(4) RPBA 2007, which states:

*"Without prejudice to the power of the Board to hold inadmissible facts, evidence or requests which **could have been presented** or were not admitted in the first instance proceedings, everything presented by the parties under (1) shall be taken into account by the Board if and to the extent it relates to the case under appeal and meets the requirements in (2)" (emphasis by the Board).*

The Board in this respect adopts a more lenient approach of holding inadmissible facts, evidence or requests which **should** have been presented.

2.2 Compared with claim 1 of the main request, features (k) *"wherein the stud portion contacts the second core or shell"* and (k') *"wherein the stud portion contacts the second core"* were added in claims 1 of auxiliary requests 1 and 6. The appellant argues that these features were taken from the description, were not related to any specific technical effect in the patent or even were presented as equivalent to the reverse feature (*does not contact the second core*), see patent, last sentence of paragraph [0045].

These requests and the corresponding arguments in their defence should have been filed and discussed during the opposition proceedings, at the latest after the preliminary opinion of the Opposition Division. The respondent should have realised by itself that this

preliminary opinion was ill-founded and illogical, and should have reacted accordingly. The respondent's arguments of limiting the number of requests for reasons of conciseness and efficiency could not be accepted as the respondent had not filed any auxiliary requests limiting the independent claims in the opposition proceedings.

Therefore auxiliary requests 1 and 6 should not be admitted into the appeal proceedings. To admit them would go against the established case law that no fresh case should be submitted before the appeal proceedings.

2.3 The Board does not share the appellant's view for the following reasons discussed at the oral proceedings:

The appellant's subjective assessment of the Opposition Division's preliminary opinion was not necessarily shared by the respondent. Moreover, the Opposition Division's preliminary opinion was positive with regard to maintenance of the patent in amended form and did not contain any incitation for the respondent to file additional auxiliary requests. As was also apparent from the minutes, nothing in the course of the oral proceedings before the Opposition Division could have justified the respondent filing new auxiliary requests. In fact, the respondent filed auxiliary requests 1 and 6 with the reply to the statement setting out the grounds of appeal, i.e. in due time pursuant to Article 114(2) EPC, thus meeting the requirements of Article 12(4) RPBA 2007.

With new requests filed in appeal proceedings, new features possibly taken from the description can also be discussed for the first time, depending on the circumstances. In the present case, the introduction of

new features leading to a more restrictive scope of the claims is not seen as amounting to a fresh case, in particular in the absence of possible further relevant prior art documents. Furthermore, the issue relating to their technical effects is linked to inventive step, i.e. to *prima facie* relevance of the requests, which is not a criterion specified in Article 12(4) RPBA 2007 (see point 2.1 above).

Thus auxiliary requests 1 and 6 are admitted into the appeal proceedings.

3. Auxiliary request 1 - inventive step

3.1 With respect to claim 1 of the main request, claim 1 of auxiliary request 1 further comprises that the stud portion contacts the second core or shell (feature (k), see point V above).

3.2 At the oral proceedings before the Board the respondent presented the following line of argument for the first time in the proceedings:

D2 did not disclose feature (k) introduced in claim 1 of auxiliary request 1. Feature (k) was therefore a further distinguishing feature over D2.

As D2 already disclosed a solution for spacing cores, see figure 2, the set-up of D3 could be regarded as an alternative solution to that of D2. However, the skilled person would have no motivation to modify the arrangement of D2 and to implement that of D3 since the core assembly of D2 did not present any problem. The skilled person could combine the teaching of D2 and D3, but would not do so.

3.3 The Board agrees with the parties that D2 does not disclose feature (k) introduced in claim 1 of auxiliary request 1.

Therefore the distinguishing features of claim 1 of auxiliary request 1 over D2 are features (b), (d) and (k) (see point 1.1 above).

3.3.1 As already discussed under point 1.3 above, D3 discloses feature (k), more specifically the alternative solution of contacting the second core (corresponding to feature (k') of auxiliary request 6, see point 4.1 below). This fact was no longer disputed by the respondent at the oral proceedings.

As a result, the reasons put forward under point 1 above for claim 1 of the main request also apply similarly to claim 1 of auxiliary request 1.

As a matter of fact, the skilled person would have no reason not to implement the full solution disclosed in D3, i.e. features (b) and (d) together with feature (k), when faced with the problem of reducing the risk of losing a spacer during handling of the core set (see point 1.2 above). In so doing they would arrive at the claimed subject-matter in an obvious manner.

3.3.2 If for the sake of argument the problem to be solved as specified by the respondent is formulated as providing an alternative solution to spacing the cores in the core assembly of D2, the Board reaches the same conclusion. The combined distinguishing features (b), (d) and (k) (see point 1.1 above) contribute to the spacing of the cores. The same technical effect is also obtained by the core assembly of D2, see figure 2.

Contrary to the respondent's view, the skilled person faced with the problem of finding an alternative solution does not need to be provided with any specific incentive in D2 to look for and implement a solution. Solving the problem is already a motivation in itself according to the problem-solution approach. In so doing, they would come across D3 and find the solution disclosed therein. They would immediately realise that the disclosed solution is an alternative one to that of D2, and hence think of implementing it in the core assembly of D2. They would encounter no technical difficulties in doing so and would arrive at the claimed subject-matter in an obvious manner.

3.3.3 Consequently, the subject-matter of claim 1 of auxiliary request 1 lacks inventive step (Article 56 EPC).

4. Auxiliary request 6 - inventive step

4.1 Claim 1 of auxiliary request 6 has been restricted by defining that the core is spaced from said second core by **a bumper** (feature (i')). Feature (k') corresponds to the alternative solution of contacting the second core remaining from the amendment of feature (k) which is known from D3 (see points 1.3 and 3.3.1 above, and also point V above).

Thus the discussion of inventive step of the subject-matter of claim 1 of auxiliary request 6 between the parties focused firstly on the definition of a bumper in feature (i'), especially with regard to the second spacer of claim 1 of auxiliary request 1, and secondly on whether the definition, if admitted, could justify inventive step.

4.2 For the respondent, the skilled reader trying to make sense of claim 9 of the patent as granted, on which claim 1 of auxiliary request 6 was based, would immediately realise that a "bumper" could not be the same as a "second spacer". The two alternative solutions corresponded to different meanings due to the use of the separating word "or" between the two ("*a bumper (93) or a second spacer (92)*") and also due to their presence in the same claim. If a bumper was to be broader so as to encompass the meaning of a second spacer, the latter would have been specified in a dependent claim.

Furthermore, the claims had to be read in the light of the description in accordance with Article 69 EPC. The term "bumper" was defined in paragraph [0047] of the patent in that a "*bumper 93 may be formed on the ceramic core 88*".

In this respect, a bumper was to be regarded as being attached to the surface of the core, as also illustrated in figure 7A of the patent.

Since D2 did not disclose such a feature, feature (i') relating to the bumper was a distinguishing feature of claim 1 of auxiliary request 6 over D2.

Unlike a spacer, a bumper could not fall out of its hole during the handling of the core as it was attached to the core. Hence the problem set for a spacer under point 1.2 above of reducing the risk of losing a spacer during handling of the core assembly before injection of the wax could not be derived on the basis of a bumper.

The technical effects related to a bumper were to obtain a solution to spacing the cores from one another and also to reduce the problem of spacers falling out.

The problem to be solved was therefore to provide a casting system having easier spacing of the cores.

Since none of the cited prior art disclosed the claimed solution, i.e. a bumper within the meaning of the patent, inventive step had to be acknowledged.

4.3 The Board is not convinced by the respondent's arguments.

4.3.1 Claim 1 of auxiliary request 6 does not comprise any feature defining a "bumper". For the skilled reader, the term "bumper" as such is not unclear, as also admitted by the respondent at the oral proceedings, so the description and drawings are not required for its interpretation (see Case Law of the Boards of Appeal, Chapter V.A.3.2.1.k). The skilled reader would instead allocate the broadest possible technical meaning to the functional term "bumper". As a result, a bumper is regarded as encompassing a second spacer.

Should the skilled reader consult the description of the patent, as argued by the respondent, they would still not find any definition of the term "bumper". The only part of the description in this respect is paragraph [0047] of the patent, which describes a bumper with, however, optional features: the bumper "may" be formed on the ceramic core. Furthermore, the patent does not comprise any definition of the expression "formed on", and figure 7A does not provide any specific teaching in this respect.

4.3.2 Notwithstanding the above, the Board in the following for the sake of argument considers the interpretation of the term "bumper" provided by the respondent at the oral proceedings. On the basis of paragraph [0047] and figure 7A of the patent the respondent argues that **a bumper is attached to the core**, i.e. in contradiction to a spacer, see paragraph [0048] of the patent. The Board notes in this respect that the respondent was no longer pursuing the interpretation that it had provided in its written submission of 13 June 2022, that a bumper would exclusively be a protruding part of the core itself, i.e. not separate from the core.

In view of the discussion on claim 1 of auxiliary request 1 under point 3.3 above, claim 1 of auxiliary request 6 differs from the disclosure of D2 in the following features:

- (b) a core that includes a body and at least one hole formed through said body
- (d) a spacer that extends through said at least one hole
- (i') the core is spaced from said second core by a bumper
- (k') the stud portion contacts the second core.

Based on the appellant's line of argument, the technical effect linked to a bumper attached to the core can be seen as being to reduce the problem of spacers falling out. This technical effect is not linked to the technical effect of the combined distinguishing features (b), (d) and (k') related to a spacer as discussed under point 3.3.2 above.

Consequently, the contribution to inventive step of the subject-matter of claim 1 of auxiliary request 6 of

features (b), (d) and (k') on the one hand and feature (i') on the other hand can be assessed independently.

As already discussed under point 3.2 above, the combination of distinguishing features (b), (d) and (k') cannot be seen as justifying inventive step of the claimed subject-matter.

On the basis of the technical effect associated with distinguishing feature (i'), the partial problem to be solved can be seen as being to provide a casting system having easier spacing of the cores, as argued by the respondent.

D1, paragraphs [0012] and [0035] and figures 1 and 18, discloses a core assembly (core combination, 24; ceramic cores, 26; metallic cores, 28, 29, 30; metallic cores are refractory metal cores, RMCs) for a casting system, comprising a core (28) that includes a body and at least one hole (64) formed through said body, see also figure 2.

D1 discloses in paragraph [0010], last three lines, in combination with paragraph [0035] and figure 18, that chaplets (350A) are applied and mated to the ceramic feedcore, acting as bumpers between the RMC and feedcore. Therefore D1 discloses the claimed solution.

4.3.3 At the oral proceedings before the Board, the respondent argued that paragraph [0035] and figure 18 of D1 did not disclose the claimed solution since sliding or rolling was involved when applying the chaplets (350A). Hence according to the respondent mating, i.e. attaching the bumper to the core, was not disclosed in D1.

4.3.4 The Board does not share the respondent's view. As a matter of fact, paragraph [0010] of D1, column 3, lines 25 to 26, referring to figure 18 explicitly discloses mating the chaplets to the ceramic core. Even though this feature is not mentioned in paragraph [0035], it is a direct and unambiguous disclosure to the skilled person of a specific embodiment of D1 even when not repeated again therein.

The skilled person, facing the above partial problem of having easier spacing of the cores, would immediately think of applying the solution disclosed in D1 to the core assembly of D2. As a result, feature (i') cannot justify inventive step.

4.3.5 In view of the above, the subject-matter of claim 1 of auxiliary request 6 lacks inventive step (Article 56 EPC).

5. Substantial procedural violation

5.1 The appellant argues that in the impugned decision the Opposition Division had not considered, let alone dealt with, the appellant's argument in respect of lack of inventive step that the technical effect would not be obtained over the whole scope claimed.

In addition, the impugned decision, by several times changing the alleged technical effects and associated problems, did not state a clear problem to be solved, thereby failing to apply the problem-solution approach.

The reasoning of the impugned decision was based on passages of the contested patent which did not relate to the distinguishing features. This issue had been raised by the appellant during the opposition

proceedings but had not been taken into account by the Opposition Division, nor dealt with in the impugned decision.

The appellant considers that these omissions in the reasoning of the impugned decision contravened Rule 111(2) EPC and thus resulted in a substantial procedural violation justifying reimbursement of the appeal fee.

5.2 The Board does not share the appellant's view.

The appellant's argument put forward during the opposition proceedings, that the technical effect would not be obtained over the whole scope claimed, is not the only one to have motivated the filing of the present appeal nor the one rendering the appeal allowable pursuant to Rule 103(1)(a) EPC, see points 1, 3 and 4 above.

The appellant's arguments regarding the different problems to be solved or passages of the description not being related to the distinguishing features in the impugned decision concern the strength of the reasoning of the impugned decision, but do not demonstrate a lack of reasoning contrary to Rule 111(2) EPC.

For these reasons the Board considers that the Opposition Division did not commit a substantial procedural violation. Hence the appellant's request for reimbursement of the appeal fee is rejected.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.
3. The request for reimbursement of the appeal fee is rejected.

The Registrar:

The Chairman:



C. Spira

B. Miller

Decision electronically authenticated