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Datasheet for the decision of 22 March 2023

Case Number: T 1123/21 - 3.3.05

Application Number: 15189940.8

Publication Number: 3156506

IPC: C21D1/34, C21D1/673, F27D11/12

Language of the proceedings: EN

Title of invention:
PARTIAL RADIATION HEATING METHOD FOR PRODUCING PRESS HARDENED PARTS AND ARRANGEMENT FOR SUCH PRODUCTION

Patent Proprietor:
Automation, Press and Tooling, A.P. & T AB

Opponent:
Benteler Automobiltechnik GmbH

Headword:
Radiation heating method/A.P.&T.

Relevant legal provisions:
EPC Art. 84

Keyword:
Claims - clarity after amendment (no)

Decisions cited:
G 0003/14

Catchword:

Europäisches Patentamt
European Patent Office
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Beschwerdekammern

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Case Number: T 1123/21 - 3.3.05

D E C I S I O N
of Technical Board of Appeal 3.3.05
of 22 March 2023

Appellant: (Patent Proprietor)	Automation, Press and Tooling, A.P. & T AB Industrigatan 5 514 32 Tranemo (SE)
Representative:	AWA Sweden AB Östra Storgatan 7 553 21 Jönköping (SE)
Respondent: (Opponent)	Benteler Automobiltechnik GmbH An der Talle 27-31 33102 Paderborn (DE)
Representative:	Osterhoff, Utz Bockermann Ksoll Griepenstroh Osterhoff Patentanwälte Bergstraße 159 44791 Bochum (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 19 May 2021 revoking European patent No. 3156506 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairwoman	S. Besselmann
Members:	T. Burkhardt
	R. Winkelhofer

Summary of Facts and Submissions

I. The patent proprietor's (appellant's) appeal is against the opposition division's decision to revoke European patent No. 3 156 506 B.

II. The opposition division had come to the conclusion that the claims of the main request and of auxiliary requests 1 and 2, while broad, fulfilled the requirements of Article 84 EPC but not those of Article 54 EPC over D10.

III. The following documents were among those discussed at the opposition stage:

D6 WO 2014/118 724 A2
D10 DE 10 2012 016 075 A1
D12 EP 2 322 672 B1

IV. With its statement setting out the grounds of appeal, the appellant submitted new auxiliary requests 3 and 4.

V. Independent claim 1 of the main request reads as follows (emphasis added by the board).

"1. Method (100) for producing a press hardened part of heat treatable material having zones (2a, 2b) of different structure by partially heating a blank (2) before the blank is processed, characterized by the steps of;

arranging (102) the blank in a furnace (10) for heating (104) the blank to a temperature equal to or

above the austenitization temperature of the material of the blank to get the blank into an austenitic phase,

arranging the heated blank in an infrared (IR) heating station (20) comprising IR radiation sources (22) configured to provide IR radiation (24) *towards an upper side* of the blank, wherein the blank is arranged on a support providing *shielding of a bottom side* of the blank from the IR radiation,

arranging (105) a mask (26) made of stainless steel or aluminum between the IR radiation sources (22) and the blank, in parallel with the blank (2), to block IR radiation (24) from reaching outside at least one first zone (2a) of the blank,

partially heating (106), by means of IR radiation (24), said at least one first zone (2a) of the blank thereby keeping the at least one first zone of the blank in the austenitic phase and letting a second zone of the blank, outside said at least one first zone, to cool below the austenitization temperature, and

arranging (108) the blank in a processing unit (30) for forming and quenching the blank to a press hardened part (2')."

VI. In independent claim 1 of auxiliary request 1, the feature in claim 1 of the main request, which relates to arranging the heated blank in an infrared (IR) heating station, is replaced as follows:

"arranging the heated blank, the blank comprising an upper side and a bottom side, in an infrared (IR) heating station (20) comprising IR radiation sources (22) configured to provide IR radiation (24) towards the upper side of the blank, wherein the blank is arranged on a support providing shielding of the bottom side of the blank from the IR radiation,".

VII. In independent claim 1 of auxiliary request 2, the following feature has been added at the end of the above-mentioned feature of claim 1 of auxiliary request 1 (see point VI.):

"such that the bottom side is substantially free from IR radiation exposure in the IR heating station,".

VIII. In independent claim 1 of auxiliary request 3, the feature of claim 1 of the main request, which relates to arranging the heated blank in an infrared (IR) heating station, is replaced as follows:

"arranging the heated blank, the blank being defined by an upper side and a bottom side, in an infrared (IR) heating station (20) comprising IR radiation sources (22) configured to provide IR radiation (24) towards the upper side of the blank, wherein the blank is arranged on a support providing shielding of the bottom side of the blank from the IR radiation,".

IX. In independent claim 1 of auxiliary request 4, the following feature has been added at the end of the above-mentioned feature of claim 1 of auxiliary request 3 (see point VIII.):

"such that the bottom side is substantially free from IR radiation exposure in the IR heating station,".

X. Oral proceedings took place on 22 March 2023.

XI. The appellant's arguments at the appeal stage which are relevant to the present decision can be summarised as follows.

Claim 1 was clear and had to be read with a mind willing to make technical sense of it. IR radiation was not emitted in straight lines. Objects in the near presence of the blank inevitably reflected IR radiation provided from the upper side of the blank towards its bottom side. This was also shown by D6, D10 and D12.

XII. The respondent's arguments at the appeal stage are reflected in the reasons below.

XIII. The appellant requests that the decision under appeal be set aside and amended such that a patent be granted on the basis of the main request of 16 February 2021, underlying the decision under appeal, or of auxiliary requests 1 or 2, filed during oral proceedings before the opposition division and underlying the decision under appeal, or auxiliary requests 3 or 4 submitted with the statement of grounds of appeal.

The respondent requests that the appeal be dismissed.

Reasons for the Decision

For the reasons set out below, none of the requests on file meets the requirements of Article 84 EPC.

Main request

1. Clarity

The features added to independent claim 1 at the opposition stage render this claim unclear (Article 84 EPC).

1.1 A patent as amended may be examined for compliance with the requirements of Article 84 EPC to the extent that the amendment introduces non-compliance with Article 84 EPC (G 3/14, OJ 2015, 102, order). This applies to the added features in this case, which specify IR radiation sources configured to provide IR radiation towards an upper side of the blank, wherein the blank is arranged on a support providing shielding of a bottom side of the blank from the IR radiation.

1.2 It is unclear how the "support", on which "the blank is arranged", can "provid[e] shielding of a *bottom* side of the blank from *the* IR radiation" when the "IR radiation sources (22) [are] configured to provide IR radiation (24) towards an *upper* side of the blank" (emphasis added by the board).

1.3 Neither the passage on page 6, lines 11 to 25 of the application as originally filed, which contains the basis for the amendment of the claims (namely, lines 19 to 21 and 22 to 25) and which is identical to paragraph [0022] of the patent in suit, nor the figures, nor the remainder of the description provide an explanation in this regard.

1.4 The appellant argued that claim 1 had to be read with a mind willing to make technical sense of it and should not be limited to a theoretical meaning. They stressed that IR radiation did not propagate in relatively straight lines as schematically shown in the figures, but was inevitably reflected on objects in the surroundings of the blank to the bottom side of the blank.

These arguments are not convincing. The patent in suit does not, in particular, specify the surroundings of the blank, and does not mention any "objects in the near presence" (see the last paragraph of the grounds of appeal) that could reflect IR radiation to the bottom side of the blank. This has not been disputed.

While it is reasonable to assume a certain degree of lateral deflection of the IR radiation provided towards the upper side of the blank, no reason can be seen why this would cause the IR radiation to be directed around the blank and towards the bottom surface, thus reversing its direction without any reflecting object causing such a reversal.

1.5 In the appellant's opinion, several prior-art documents proved that such a reflection to the bottom side of the blank inevitably occurred even if IR radiation was provided towards the upper side of the blank:
- paragraph [0032] of **D12** in combination with Figure 6A
- the infrared furnace 10 of the figures of **D6**
- Figure 6 of **D10**

However, these arguments are likewise not convincing.

- Figure 6A of D12 and accompanying paragraph [0032] merely disclose a certain lateral deviation (2a) of the IR radiation (2) provided towards an upper side of the blank (3). D12 does not disclose a reversal of the direction of this radiation to the bottom side of the blank. IR lamps are arranged above and below the blank. IR radiation is thus directed from below towards the bottom side. There is however no mention of IR radiation towards the upper side of the blank reaching the bottom side.

- Figures 2 to 8 of D6 disclose a reflective surface 3 below blank W. This surface reflects the radiation from the IR lamps 1 above the blank W towards the bottom side of the blank. By contrast, the patent in suit is entirely silent on such a reflective surface below the blank.

- The same holds true for Figure 6 of D10, where the bottom side of the furnace 2 is just below the blank (see in particular section B-B) and can thus reflect radiation towards the bottom side of blank 1. By contrast, no such furnace bottom side below the blank is mentioned in the context of the "heating station" of claim 1, be it explicitly or implicitly.

1.6 The appellant also argued that diffuse reflection was ubiquitous and would inevitably reach the bottom side, if not shielded.

However, there is no indication that the patent in suit specifically concerns diffuse reflection. Moreover, given the space between the mask and the upper side of the blank (see the figures of the patent in suit), diffuse reflection would also reach the masked areas of the upper side of the blank, outside the first zone (2a), even though claim 1 specifies that the mask blocks IR radiation from reaching these areas. Diffuse reflection would also be governed by the surroundings of the blank which, as indicated, are not specified.

1.7 In the absence of any further details or explanations in the patent in suit, the skilled person would not regard any reflected IR radiation as "the IR radiation" that is "provide[d] ... towards an upper side of the blank" of claim 1.

1.8 In conclusion, it is unclear how a bottom side of the blank is shielded from the IR radiation when the IR radiation sources are configured to provide the IR radiation towards an upper side of the blank, and when claim 1 does not further specify the surroundings of the blank in the heating station.

Auxiliary requests

2. It has not been disputed that independent claim 1 of all auxiliary requests also requires that IR radiation be provided to an *upper* side of the blank whereas the support provides shielding of a *bottom* side.

Hence, the clarity objection of point 1. also applies to all the auxiliary requests (Article 84 EPC).

The question of whether auxiliary requests 3 and 4 are to be considered under Article 12 RPBA 2020 may therefore be left unanswered.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairwoman:

L. Stridde S. Besselmann

Decision electronically authenticated