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**Datasheet for the decision
of 16 August 2018**

Case Number: T 2362/15 - 3.2.08

Application Number: 09761038.0

Publication Number: 2358916

IPC: C21D1/20, C21D1/46, C21D9/00,
B60G7/00, B60G9/00

Language of the proceedings: EN

Title of invention:
HARDENING OF FLEXIBLE TRAILING ARMS

Patent Proprietor:
VDL Weweler B.V.

Opponent:
Verband der Deutschen Federnindustrie e.V. (VDFI)

Headword:

Relevant legal provisions:
EPC Art. 100(a), 56, 123(2), 84

Keyword:
Inventive step
Amendments

Decisions cited:

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 2362/15 - 3.2.08

D E C I S I O N
of Technical Board of Appeal 3.2.08
of 16 August 2018

Appellant: Verband der Deutschen Federnindustrie e.V.
(Opponent) (VDFI)
Goldene Pforte 1
58093 Hagen (DE)

Representative: Haverkamp, Jens
Gartenstrasse 61
58636 Iserlohn (DE)

Respondent: VDL Weweler B.V.
(Patent Proprietor) Kayersdijk 149
7332 AP Apeldoorn (NL)

Representative: EP&C
P.O. Box 3241
2280 GE Rijswijk (NL)

Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
16 October 2015 concerning maintenance of
European patent No. 2358916 in amended form**

Composition of the Board:

Chairwoman P. Acton
Members: M. Alvazzi Delfrate
P. Schmitz

Summary of Facts and Submissions

- I. In its decision posted on 16 October 2015 the opposition division found that European patent No. 2 358 916, in amended form according to auxiliary request 2 then on file, and the invention to which it related met the requirements of the EPC.
- II. The appellant (opponent) lodged an appeal against that decision in the prescribed form and within the prescribed time limit.
- III. The appellant requested that the decision under appeal be set aside and that the patent be revoked. Oral proceedings were requested as a precautionary measure.

The respondent (patent proprietor) requested in its reply to the grounds of appeal that the appeal be dismissed and that the patent be maintained in the amended form agreed by the opposition division or, in the alternative, that the patent be maintained on the basis of one of auxiliary requests 1-5 as filed by letter of 27 June 2016. Oral proceedings were requested as a precautionary measure.

- IV. Claim 1 of the **main request** (this request corresponds to the granted claims but for the deletion of claim 7) reads as follows:

"A method for manufacturing a flexible trailing arm (1) for a wheel axle suspension of a vehicle such as a lorry or a trailer, comprising the following steps:
- heating a steel blank,
- forming the blank into the desired shape of the trailing arm (1) by means of a suitable forming process,

- austempering the formed trailing arm (1) by cooling it in a warm liquid medium."

Claim 1 of **auxiliary request 1** (amendments in respect of the main request emphasised) is directed to a method for manufacturing a flexible trailing arm

"for a wheel axle suspension of a ~~vehicle such as a~~ lorry or a trailer,"

Claim 1 of **auxiliary request 2** differs from claim 1 of the main request by the addition of the following features

"the flexible trailing arm comprising a spring portion with a substantially rectangular cross section, an eyelet at the front end of the spring portion for hingedly mounting the trailing arm to the vehicle and a mounting portion at the rear end of the spring portion where a wheel axle body can be mounted to the trailing arm,"

Auxiliary requests 3 and 4 differ from the main request by deletion of dependent claims 2 and 6 respectively.

Auxiliary request 5 differs from the main request in that it specifies the trailing arm

"having a tensile strength of 1300-1600 N/mm²".

V. The following documents played a role for the present decision:

D1: DE -T- 697 28 076;

D2: US -A- 2003/0067134.

VI. In the letters of 12 February 2016 (statement of grounds of appeal) and 21 October 2016 the appellant submitted arguments in support of its requests. Where relevant for this decision, said arguments may be summarised as follows:

Main request

The invention claimed in the main request was not patentable because it was not sufficiently disclosed, lacked novelty and was rendered obvious by a number of combinations of documents, including the combination of D2 and D1.

Starting from D2 the objective problem solved by the claimed invention was how to select an appropriate thermal treatment for the flexible trailing arm.

This problem was solved by the choice of thermal treatment of claim 1.

Said choice was rendered obvious by D1, which disclosed said thermal treatment for car components with the necessary mechanical properties.

Auxiliary requests

Auxiliary request 1 did not introduce any limitation in view of D2.

Auxiliary request 2 introduced a feature which was not clear and was originally disclosed only in combination with other features. Hence, it was not allowable in view of the requirements of Articles 84 and 123(2) EPC.

Auxiliary requests 3 and 4 could not establish patentability because they merely deleted some dependent claims.

The achievement of the strength values required by auxiliary request 5 was either obvious or not sufficiently disclosed.

VII. The respondent (by letter of 27 June 2016) submitted corresponding counter-arguments which may be summarised as follows:

Main request

D2 did not mention a hardening treatment of a trailing arm. Moreover, the tensile strength mentioned in D2 was too low for a flexible trailing arm as intended in the patent in suit.

The tensile strength which could be achieved by the method of D1 was lower than the strength that the person skilled in the art would be able to achieve by conventional methods. Moreover, D1 did not mention springs or trailing arms. Starting from D2 the person skilled in the art would have no expectation as to how to obtain the required tensile strength of 1300-1600 N/mm². D1 did not teach such a strength. Hence, the person skilled in the art starting from D2 would not arrive at the claimed method, even taking D1 into consideration.

Auxiliary requests

Auxiliary requests 1 and 2 specified the definition of the trailing arm. A basis for the features added by

auxiliary request 2 was to be found in the description in combination with Figures 1 and 4.

Auxiliary request 3 and 4 addressed objections of insufficiency of disclosure in respect of the dependent claims.

Auxiliary request 5 was filed in case the Board considered that a sufficient strength of the trailing arm was not implicit.

- VIII. By notification of 22 December 2017 the parties were summoned to oral proceedings.
- IX. By letter of 5 March 2018 the respondent announced that it would not attend the oral proceedings.
- X. The Board set out its preliminary opinion in a communication dated 12 April 2018, referring *inter alia* to the relevance of the combination of D2 and D1 for inventive step in respect of the main request and to a possible lack of clarity in auxiliary request 5.
- XI. No further submissions were received by the parties.
- XII. With a communication dated 25 July 2018 the Board cancelled the oral proceedings.

Reasons for the Decision

- 1. Main request - inventive step
 - 1.1 D2 discloses a method for manufacturing a flexible trailing arm (spring beam 20) for a wheel axle suspension of a vehicle, comprising heating a steel

blank and forming the blank into the desired shape of the trailing arm by means of a suitable forming process (paragraph [0043]). It is true that the tensile strength disclosed in paragraph [0052] of D2 is lower than the preferred tensile strength according to paragraph [0010] of the patent in suit (1300-1600 N/mm²). However, since the claim does not recite any value for tensile strength, the person skilled in the art would have considered D2, which like the patent in suit relates to the production of a flexible trailing arm, as a possible starting point.

- 1.2 D2 does not disclose austempering the formed trailing arm by cooling it in a warm liquid medium as stipulated in claim 1.

This distinguishing feature gives rise to a trailing arm with a substantially bainitic structure, at least at the outside regions. A bainitic structure is more ductile than the martensite structure which is common in flexible trailing arms. With the claimed method a tempering step, which is necessary with a martensite structure, can be omitted, which saves energy and time (paragraph [0006] of the patent).

Thus, the problem to be solved starting from D2 can be seen as how to provide an alternative manufacturing method whereby energy and time savings are achieved (paragraphs [0004] and [0006] of the patent in suit).

- 1.3 D1 discloses austempering the formed trailing arm by cooling it (claim 1). A bainitic structure is obtained (paragraph [0011]). For the person skilled in the art it is thus clear that a tempering step, which is necessary with a martensite structure, can be omitted.

Although D2 does not mention the application of this hardening treatment to a trailing arm, it does disclose its application to vehicle components (paragraph [0035]). Although the tensile strength mentioned in D1 is too low for a flexible trailing arm as intended in the patent in suit, the mechanical properties obtained in D1 without the need for a further tempering step are well within the range required by D2, paragraph [0052]. The fact that in the patent better properties are aimed at is irrelevant, since they are not stipulated in the claim.

Thus, starting from D2, D1 renders it obvious to solve the given problem by austempering the formed trailing arm by cooling it. Since the choice of a warm liquid medium for cooling after austempering is standard, it was obvious to arrive at the subject-matter of claim 1.

Hence, the subject-matter of claim 1 does not involve an inventive step.

2. Auxiliary requests

2.1 Auxiliary request 1 does not add any limiting feature compared to D2, which also discloses that trailing arm suspensions are used in heavy-duty applications such as a tractor-trailer configuration (paragraph [0005]). Therefore, the subject-matter of claim 1 of auxiliary request 1 does not involve an inventive step either.

2.2 The application as originally filed discloses a "substantially rectangular cross section" on page 3, last paragraph. However, said feature is disclosed only in combination with other features, such as the width/thickness ratio, that are not included in claim 1 of auxiliary request 2. Since the application as

originally filed does not provide any basis for isolating the substantially rectangular cross-section from said other features, claim 1 of auxiliary request 2 does not meet the requirements of Article 123(2) EPC.

2.3 Auxiliary requests 3 and 4 differ from the main request only in the deletion of dependent claims. Thus, their claims 1 do not involve an inventive step for the same reasons as have been explained for the main request.

2.4 The strength values of auxiliary request 5 are not to be found in the claims as granted but only in the description (paragraph [0010] of the patent specification). Thus, the clarity of this amendment needs to be examined.

It is not clear how the strength of the arm is defined, since it is possible and contemplated (paragraph [0007] of the patent) that different regions exhibit different microstructures and, as a consequence, different strengths.

Therefore, claim 1 of auxiliary request 5 lacks clarity (Article 84 EPC).

3. The announcement of the respondent that it would not attend the oral proceedings equates to a withdrawal of its precautionary request for oral proceedings. Hence, the sole precautionary request for oral proceedings is that of the appellant.

For the reasons given above the appealed decision is to be set aside and the patent revoked, as requested by the appellant.

Therefore, the present decision can be given in writing.

Order

For these reasons it is decided that:

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

The Registrar:

The Chairwoman:



C. Rodríguez Rodríguez

P. Acton

Decision electronically authenticated