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**Datasheet for the decision
of 7 December 2016**

Case Number: T 0257/15 - 3.2.01

Application Number: 05076954.6

Publication Number: 1632370

IPC: B60G11/46, B60G11/28, B60G7/00,
B60G9/00

Language of the proceedings: EN

Title of invention:
Suspension arm with flattened end part

Patent Proprietor:
VDL Weweler B.V.

Opponents:
BPW Bergische Achsen KG
Schomäcker Federnwerk GmbH
Frauenthal Automotive Components GmbH

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (no)

Decisions cited:

Catchword:



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Case Number: T 0257/15 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 7 December 2016

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted on 23 December 2014 rejecting the opposition filed against European patent No. 1632370 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman G. Pricolo
Members: W. Marx
O. Loizou

Summary of Facts and Submissions

- I. The opponents (opponents 01 to 03) each lodged an appeal against the decision of the opposition division rejecting their oppositions against European patent No. 1 632 370.
- II. In its decision the opposition division held *inter alia* that granted claim 1 met the requirement of Article 123(2) EPC and that the subject-matter of granted claim 1 was new and inventive in view of document EP-A-1 138 432 (D1).
- III. Together with its reply to the appeals the respondent (patent proprietor) filed 1st to 4th Auxiliary Requests with letter dated 11 September 2015.
- IV. With letter dated 2 December 2016, opponent 01 withdrew its opposition.
- V. Oral proceedings before the board took place on 7 December 2016, at the end of which opponent 03 withdrew its appeal, remaining as a party as of right.

The appellant (opponent 02) and opponent 03 requested that the decision under appeal be set aside and that the patent be revoked.

The respondent (patent proprietor) requested that the appeal be dismissed and the patent be maintained as granted (main request), or in the alternative, that the patent be maintained in amended form on the basis of the set of claims of one of the first to fourth auxiliary requests, all requests filed during oral proceedings. All other requests were withdrawn.

VI. Claim 1 as granted (main request) reads as follows (broken into a feature analysis adopted by the parties):

1/1a Method for making a resilient arm (1) for an air sprung wheel suspension system, wherein

2/1b - the arm (1) is brought in a shape with a substantially rectangular cross section by rolling,

3/1c - a first end part (2) is formed on the arm (1) in the form of a securing eyelet, which is designed to pivotably secure the arm (1) to the chassis of a vehicle and,

4/1d - a second end part (3) is integrally formed on the arm (1), which second end part (3) is designed to mount an air spring bellows on the arm,

characterized in that

5/1e the second end part (3) is formed by flattening but not rolling such that it becomes wider than the width of the remainder of the arm (1).

Claim 1 according to the first auxiliary request reads as follows (additions to granted claim 1 are underlined, deletions are marked by strike-through):

1/1a Method for making a resilient arm (1) having a first end part and a second end part for an air sprung wheel suspension system, wherein

2/1b - the arm (1) is brought in a shape with a substantially rectangular cross section by rolling, wherein the second end part is not rolled,

3/1c - the a first end part (2) is formed on the arm (1) in the form of a securing eyelet, which is designed to pivotably secure the arm (1) to the chassis of a vehicle and,

4/1d - the a second end part (3) is integrally formed on the arm (1), which second end part (3) is designed to mount an air spring bellows on the arm,

~~characterized in that~~ and wherein

5/1e the second end part (3) is formed by flattening but not rolling such that it becomes wider than the width of the remainder of the arm (1).

In claims 1 according to the second and third auxiliary requests, compared to claim 1 according to the first auxiliary request, feature 2/1b has been reformulated and reads:

2/1b - the arm (1) is brought in a shape with a substantially rectangular cross section by rolling, wherein the thickness varies over the length of the arm, while the width is substantially constant, and wherein the second end part is not rolled, (second aux. request)

2/1b - the arm (1) is brought in a shape with a substantially rectangular cross section,

wherein the thickness varies over the length of the arm while the width is substantially constant, by rolling, and wherein the second end part is not rolled, (third aux. request)

Claim 1 according to the fourth auxiliary request corresponds to claim 1 of the third auxiliary request except for a further amendment in feature 5/1e:

5/1e the second end part (3) is formed by flattening but not rolling such that it becomes at least 25% wider than the width of the remainder of the arm (1).

VII. The arguments of the appellant and of opponent 03 in as far as they are relevant to this decision can be summarised as follows:

The discussion of inventive step was the same for the main request and the first to third auxiliary requests. D1 showed a suspension arm for similar applications, which was - in general terms - flattened over its entire length and - specifically - rolled. Claim 1 excluded rolling from a variety of possibilities for flattening. The skilled person knew the relevant standards concerned with flattening methods (such as the German DIN norm cited in opposition proceedings), and even without having to cite any standard, various flattening methods formed part of the basic knowledge of the person skilled in the art. He would understand the term flattening as implying any pressure forming method, comprising rolling, impressing, pushing through and stretching. Starting from D1 showing rolling tools, it was within the knowledge of the skilled person and

at its discretion to have them replaced by other tools suitable for flattening. Moreover, the feature that the second end part was wider was not a feature of the claimed method and thus should be disregarded when assessing inventive step. If this feature was given a significance for the claimed method, then, having regard to paragraph [0003] of the patent addressing prior art with a larger supporting surface in the lateral direction, e.g. by providing a reinforcing plate or bending the second end part of the suspension arm sideways, the skilled person had an incentive to increase the width of the second end part. It would thus be obvious to select one of the known flattening processes apart from rolling, in order to provide a wider second end part of the resilient arm.

The additional feature of claim 1 of the fourth auxiliary request did not justify an inventive step either, as the required width of the resilient arm was predetermined by the size of the air-spring bellow.

VIII. The respondent's arguments relevant to the present decision can be summarised as follows:

D1 showed a suspension link having a leading cantilever portion shaped to be pivotally mounted to a vehicle body and a trailing cantilever portion adapted to have an air suspension unit mounted upon it. In terms of claim 1 of the present patent, D1 taught - explicitly and exclusively - to roll the second end part (the trailing cantilever portion) such that it had a taper in the thickness direction and in the width direction (cf. par. (0052] to (0070])). D1 did not disclose that the second end part was made wider than the remainder of the arm. Moreover, D1 did not disclose that the second end part was flattened (and not rolled) to make

it wider. The question in determining whether or not a method contained an inventive step was not whether a skilled person could have combined the teachings of different pieces of prior art, but whether he would have done so. There was no suggestion or incentive found for a skilled person in any of the submitted documents, nor in the common general knowledge, to flatten (not roll) the second end part to make it wider. In particular, no incentive was to be found regarding the problem posed in the patent specification, which disclosed in paragraph [0003] of the A-publication two known options. Claim 1 was not covering all options of pressure forming except rolling, since claim 1 also specified the final end result ("becomes wider").

As regards claim 1 according to the fourth auxiliary request, it was only considered relevant when adopting an interpretation of the term "wider" including very small increases in width, e.g. such as due by tolerances.

Reasons for the Decision

1. The appeal of the sole appellant (opponent 02) is admissible. The issue of admissibility of the appeal of opponent 03 discussed in appeal proceedings becomes irrelevant following the withdrawal thereof.
2. *Inventive step (Article 56 EPC)*
 - 2.1 All requests fail to fulfil the requirements of Article 56 EPC, since the subject-matter of claim 1 as granted and also the subject-matter of claims 1 according to the first to fourth auxiliary requests do

not involve an inventive step in view of the teaching of document D1 and the knowledge of the person skilled in the art.

- 2.2 D1 discloses a method for making a resilient arm for an air sprung wheel suspension. The arm, having a first end part in the form of a securing eyelet and a second end part designed to mount an air-spring bellows, is brought in a shape by rolling. D1 also explicitly mentions (page 3, paragraph [0020]) that the arm is manufactured from off-the-shelf steel bars which might be of rectangular cross section, so that the preamble of granted claim 1 is known from D1. This was not contested by the parties.

In D1, the second end part is formed by two successive rolling steps, such that it has a taper in the thickness direction and in the width direction, resulting in a second end part which is smaller in width than the remainder of the arm (Figures 3a to 3c). D1 starts from a known prior art (Figure 2) having a substantially constant width and being tapered in thickness towards its leading end where the eye is provided (see paragraph [0010]). As can be seen by comparing Figures 2 and 3a, the suspension arm according to the prior art (Figure 2) has a constant width along its full length. In both drawings, bores are provided for mounting the air-spring bellows, i.e. there is - in contrast to what is addressed in the patent specification - sufficient mounting surface available for mounting the air-spring bellows.

- 2.3 D1 does not show that the second end part is formed by flattening but not rolling, as expressed in the characterising portion of granted claim 1. The further feature specifying the result of the flattening process

("such that it becomes wider ...") provides - contrary to the allegation of the appellant - a limitation with regard to the known flattening processes apart from rolling, since it excludes all the flattening processes which do not provide an increased width of the resilient arm, i.e. which do not displace material in the lateral direction of the resilient arm.

As explained in paragraph [0003] of the patent specification, there might arise a problem when making resilient arms more narrow due to the narrow mounting surface available, in particular in a situation in which the air-spring bellows needs to be mounted offset with respect to the longitudinal centre axis of the resilient arm. As known solutions, the patent specification (see also the application as filed) mentions a bellows carrier or a reinforcing plate, but also a second end part being bent sideways, so that the resilient arm acquires the shape of a hockey stick.

According to paragraph [0005] of the patent specification, the object of the invention (i.e. the problem to be solved) is to provide a resilient arm in which an air-spring bellows can be mounted on a relatively narrow resilient arm without the need for additional means on the resilient arm (even if they are mounted laterally offset). The board also finds that the distinguishing feature solves the objective technical problem of mounting air-spring bellows on narrow resilient arms which do not provide sufficient mounting surface. As argued by the appellant, the mounting surface required depends on the air-spring bellows which has to be attached to the resilient arm.

2.4 Starting from D1 as the closest prior art, the board holds that the skilled person would start from Figure 2

of D1, which relates - in comparison to Figure 3a - to a relatively narrow suspension arm. The second end part according to Figure 2 shows mounting bores so that it apparently provides still sufficient mounting surface for mounting air-spring bellows as depicted in Figure 1. Dealing with the problem of mounting air-spring bellows to narrow resilient arms which do not provide a mounting surface sufficiently large for attaching given air-spring bellows, the skilled person would not contemplate further decreasing the mounting surface by applying a further rolling step as described in D1 for the embodiment according to Figure 3a, which shows a taper also in the width direction. On the contrary, the skilled person will recognise that - in order to increase the mounting surface - he has a limited number of options, namely increasing the length of the resilient arm or its width or both, if not relying on an additional part (such as a bellows carrier or a reinforcing plate) as known in the prior art (see paragraph [0003] of the patent specification).

The board notes in this respect that the patent specification mentions already one solution in the known prior art which does not require any additional mounting means, namely a second end part bent sideways, which is said to take the form of a hockey stick. Hockey sticks show a flattened end portion of increased width as prolongation of the stick having a smaller diameter. It is therefore already questionable whether this known solution does not provide already a clear indication for a flattening process which increases the width of the second end part and therefore - in the understanding of "rolling" according to the patent specification itself (see paragraph [0002]: "brought into the desired shape by rolling, in which case the thickness varies over the length of the resilient arm

while the width is substantially constant") - must be different from rolling which does not change the width.

Moreover, the board considers that the skilled person in the present case is someone who is familiar with the processes which can be applied in order to shape or form metal parts. He knows about the variety of pressure forming processes, and he would select - in view of the problem of mounting an air-spring bellows on to a narrow surface - a process appropriately. In view of the immediately recognisable options as mentioned above, selecting a flattening process which increases the width of the second end part is one of the obvious possibilities when looking for a process that increases the surface for mounting air-spring bellows to the resilient arm. This would lead the skilled person in an obvious manner to select a pressure forming process other than rolling, since "rolling" according to the definition given in the patent itself (see above) would keep the width of the resilient arm substantially constant.

2.5 It follows from the foregoing that the method for making a resilient arm according to claim 1 as granted, which requires in its characterising portion a flattening process other than rolling for forming the second end part such that it becomes wider than the width of the remainder of the arm, cannot be considered as involving an inventive step.

2.6 The first to third auxiliary requests have only been filed in order to overcome objections under Article 100(c) and Article 123(2) EPC with regard to feature 2/1b. By simply repeating the text "the second part is not rolled" in feature 2/1b, which is already present in feature 5/1e, the discussion on inventive

step does not change. The same applies to the additional feature introduced in claim 1 of the second or third auxiliary request ("wherein the thickness varies..."), which only introduces a further characterisation of the rolling process, as already adopted by the board when discussing inventive step of the main request starting from Figure 2 of D1. Reciting "having a first and part and a second end part" in feature 1/1a is only necessary for clarity reasons since the following features refer to the second end part. This has not been contested by the parties.

2.7 In comparison to the third auxiliary request, claim 1 according to the fourth auxiliary request specifies an increase in width of 25% or more ("at least 25% wider") when forming the second end part by flattening but not rolling. The respondent has not provided convincing arguments about any inventive contribution of this additional feature and even admitted that the fourth auxiliary request was only relevant when adopting an interpretation that the term "wider" included an increase by a very small amount. In fact, the board finds that the claimed increase in width by 25% or more is an obvious selection when starting from a known resilient arm which is too narrow to mount air-spring bellows. Again, it is noted that the known solutions according to the patent specification, in particular a resilient arm having the shape of a hockey stick, would also suggest an increase of more than 25%.

3. Since none of the requests are allowable, the patent has to be revoked.

Order

For these reasons it is decided that:

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

The Registrar:

The Chairman:



I. Aperribay

G. Pricolo

Decision electronically authenticated