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**Datasheet for the decision
of 23 March 2007**

Case Number: T 1200/05 - 3.2.01

Application Number: 98950592.0

Publication Number: 1027222

IPC: B60G 11/27

Language of the proceedings: EN

Title of invention:

Two-axle vehicle suspension arrangement

Patentee:

VOLVO LASTVAGNAR AB

Opponent:

MAN Nutzfahrzeuge Aktiengesellschaft

Headword:

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Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (no)"

Decisions cited:

T 0748/91, T 1313/04, G 0011/91, T 0204/83, T 0056/87

Catchword:

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Case Number: T 1200/05 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 23 March 2007

Appellant:
(Patent proprietor)

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Representative:

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Respondent:
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Representative:

-

Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 14 July 2005
revoking European patent No. 1027222 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: S. Crane
Members: P. L. P. Weber
T. Karamanli

Summary of Facts and Submissions

I. The appeal is against the decision of the opposition division posted on 14 July 2005 revoking European patent No. 1027222 because the subject-matter of amended claim 1 lacked inventive step over a combination of D2: DE-A-1780497 and D4: US-A-2903256.

A notice of appeal was filed 13 September 2005 and the appeal fee was paid on the same day. The statement of the grounds of appeal was filed on 14 November 2005.

II. Oral proceedings were held on 23 March 2007.

The appellant (patentee) requests that the contested decision be set aside and the patent be maintained in amended form on the basis of claim 1 as filed during the oral proceedings before the opposition division on 23 June 2005.

The respondent (opponent) requests that the appeal be dismissed.

III. Claim 1 reads as follows:

"1. Two-axle vehicle suspension arrangement comprising

a pair of support members for each axle,

means for fixing the wheel axles between the ends of
each support member,

and air spring elements disposed at or in the vicinity of the ends of the support members and joining the support members to a frame,

characterized in

that the wheel axles (16) are fixed in an axle position asymmetrically between the outer ends of the support members (6), and

that the support members of one axle are reversed in relation to the support members of the other axle, so that the spring elements (8) located closest to the respective axle position are directed towards each other,

the spring elements (8,9) being so selected that the cross sectional area of the spring elements (8) located closest to the axle position is greater than the cross sectional area of the other spring elements (9)."

IV. The arguments of the appellant can be summarized as follows:

The main question to be decided upon is to know what is disclosed in D2, and more particularly whether the features of the characterizing portion of present claim 1 are disclosed in Fig.3, which is the only place where the respondent and the board appear to see an asymmetric positioning of the wheel axle between the outer ends of the support member for the axle and thus of the air spring elements.

In this context it is worth noticing that the only place in the description where anything is said about the position of the air spring elements is in the middle of page 2 of D2. There it is explained that in a well known manner each rear axle comprises two air spring elements on each side of the vehicle which are placed one in the front of the axle and one behind the axle at small distance to the axle. It is important to note that the German term "...mit kleinem Abstand..." is singular and thus expresses that there is only one distance and not several ones as the author of D2 would have had to say had he thought of using a different distance to the axle for the front air spring element than for the rear air spring element. Furthermore it cannot be excluded that the draftsman made a mistake when drawing Fig.3.

The different distances to the axle can thus not be considered to be disclosed in D2 as the description teaches the contrary to what is apparently shown in Fig.3.

This is also in line with the indication in the third paragraph on page 3 of the description of D2 that representations in the figures are schematic.

The Boards of Appeal have stated in several decisions, as for instance in T 204/83 (OJ 1985, 310) or T 56/87 (OJ 1990, 188), that it is important in such circumstances to examine what the skilled man would consider to be disclosed and in particular that the document must be considered in its entirety, so that individual features taken in isolation from schematic drawings which are in contradiction with the teaching

of the description cannot be considered as having been disclosed.

For these reasons the features of the characterising portion of claim 1 cannot be considered to be directly and unambiguously disclosed in D2.

Concerning inventive step, it is undisputed that the first part of claim 1 is known from D2.

The effects of the characterising features are the provision of an increased space on one side of each axle while reducing the overall length of the axle support construction, the provision of an increased space in front and behind the axles, a reduction in tire wear and in the turning radius and finally through the use of air spring elements of different sizes reduction or elimination of the imbalance existing in prior art suspension constructions.

The objective problem can thus be seen in the provision of an improved two axle suspension allowing a reduction of the total length necessary while allowing a more balanced working of the suspension and thus an improvement in the riding conditions.

D2 does not mention this problem. D4 shows an asymmetrical arrangement but only for a single axle suspension and does not contain any teaching as to how the objective problem should be solved. In column 1, lines 18 to 20 of D4 only the provision of good stability is mentioned.

In addition the combination of D2 with D4 would anyway not suggest that the support members of one axle should be reversed in relation to the support members of the other axle, so that the spring elements located closest to the respective axle position are directed towards each other.

So when considering the invention without an ex-post approach the skilled man has no incentive to look at D4 but even if he considered the teaching of D4 this would not bring him to the invention as claimed.

V. The arguments of the respondent can be summarized as follows:

D2 shows the closest prior art in its Fig.3. It is important to remember that it is established case law of the Boards of Appeal that the drawings are part of the disclosure of a patent document, see for instance G 11/91 (OJ 1993, 125), and that proportions can be taken from drawings, see for instance in T 748/91 (not published).

The skilled man in the field of vehicle construction is used to reading technical drawings and when he looks at Fig.3 of D2 he will immediately recognise that the wheel axles 1,2 are fixed in an axle position asymmetrically between the outer ends of the support members 3, and that the support members of one axle are reversed in relation to the support members of the other axle, so that the spring elements 5 located closest to the respective axle position are directed towards each other.

Several parts of the drawing in Fig.3 point towards these features. Not only the distances between the inner air spring elements and the respective axle are smaller but also the inner air spring elements are shown closer to the rectangular element which is arranged symmetrically with respect to the axle.

Concerning the alleged unique distance mentioned in the description, "...mit kleinem Abstand..." does not imply that there is only one small distance present but simply that all air spring elements are arranged with a small distance.

It can therefore not be alleged that there is a contradiction between the description and the drawing. The fact that the drawings are said to be schematic does also not mean that the proportions shown are wrong.

It is further to be noted that the appellant itself has recognised in its statement of the grounds of appeal that the rear axle arrangement shown in Fig.2 of D2 is asymmetrical whereas the front one is symmetrical although this is also not mentioned in the description of D2.

Consequently the only difference between the prior art according to D2 and the claimed suspension arrangement is that the air spring elements are so selected that the cross sectional area of the spring elements located closest to the axle position is greater than the cross sectional area of the other spring elements.

The objective problem can therefore only be to improve the riding comfort.

This problem is not specifically linked with the fact that there are two axles or only one axle, so that the skilled man would find the solution in D4 in which the air spring element closer to the axle is of greater diameter in order to increase the riding stability.

It is further to be noted that the solution proposed in the patent in suit is nothing else than a simple application of the theory of the lever.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rule 64 EPC. It is therefore admissible.
2. *Interpretation of D2*
 - 2.1 It is undisputed that D2 shows a two axle vehicle suspension arrangement comprising all the features of the first part of claim 1. The suspension arrangement shown in D2 comprises a pair of support members 3 for each axle 1,2, means for fixing the wheel axles between the ends of each support member, and air spring elements 4,5 disposed at or in the vicinity of the ends of the support members 3 and joining the support members to a frame 6.

It is also undisputed that D2 does not show the feature of the spring elements having different cross sectional areas.

It remains thus to be determined whether the features

(i) that the wheel axles are fixed in an axle position asymmetrically between the outer ends of the support members, and

(ii) that the support members of one axle are reversed in relation to the support members of the other axle, so that the spring elements located closest to the respective axle position are directed towards each other,

are disclosed in D2 or not. More specifically whether these features are disclosed in the drawing of Fig.3, since there is no detailed description of these features in the other parts of the D2 publication.

2.2 It is established jurisprudence of the Boards of Appeal and undisputed by the parties that the drawings in a published patent or patent application are part of the disclosure of that document.

In the present case although in the description of D2 it is indicated that in the drawings the invention is represented in a schematic way it appears at a first glance that these drawings are quite precise. As a matter of fact they show for instance a number of bolts including the bolts for fixing the air spring elements to the frame 6 of the lorry, they show a precise shape of the support members 3 with the cross sectional area increasing towards the axle, they show the turned back ends of the spring leafs 13 and their fixation bolt 14 and 15, to name only some of the details shown.

If a draftsman has paid attention to all these details, there seems not to be any reason why when drawing the spring elements he would suddenly not pay the same attention to the distance between these spring elements and the respective axle.

The air spring elements in the centre of the two-axle vehicle suspension arrangement are clearly shown closer to the respective axle than the air spring elements at the front and rear extremities of the suspension arrangement.

This is visible for instance in the shorter distance on the side of the inner air spring elements between the air spring element outer surface and the outer surface of the element 12, from the fact that the outer lower corner of the flexible part of the inner air spring element crosses the symmetrical rectangular element whereas the inner lower corner of the flexible part of the outer air spring element does not, and from the fact that the fixation plate for fixing the air spring element to the frame is closer to the element 12 or 19 for the inner air spring element than for the outer air spring element.

That the draftsman generally paid attention to details can also be seen in Fig.2 where it is shown that the rear axle is mounted asymmetrically while the front axle is mounted symmetrically. This can be seen when looking at the distances between the spring elements 4,5 and the axle 2 and has been accepted as being shown by the appellant in its statement of the grounds of appeal.

The board has thus no doubts that the features (i) and (ii) mentioned above are disclosed in the drawing of Fig.3.

- 2.3 The appellant considered that the stated schematic nature of the drawing and the mention of a "...kleinem Abstand..." in the description must imply that there is a contradiction between the drawing and the description and that no conclusion could be drawn from Fig.3 when it comes to the dimensions.

The board does not share the opinion of the appellant. The mention of a "...kleinem Abstand..." in the description of D2 does not mean that there is one unique small dimension at which all of the air spring elements are arranged but simply means that the air spring elements are all arranged a small distance from the respective axle.

Given the many details shown in the drawings it is not clear why the drafter of D2 considered the invention to be shown schematically in the drawings. This is however of secondary importance since the Boards of Appeal have decided on many occasions that even on a schematic drawing clear differences of proportions can be considered to be disclosed, see for instance T 748/91 or T 1313/04 (not published, point 2.2 of the reasons).

3. Accordingly the only differentiating feature is the feature of the spring elements being so selected that the cross sectional area of the spring elements located closest to the axle position is greater than the cross sectional area of the other spring elements.

In the suspension arrangement according to Fig.3 of D2, absent any information to the contrary, all spring elements are identical and the cross sectional area of the spring elements is thus identical for all spring elements. This has the consequence that when a vertical force is applied to the support member through the axle of the wheel the spring member situated on the shorter side of the support member will be subject to a greater force than the one on the other side of the axle and thus this spring member will be more compressed than the other one with the direct consequence that the support member will not move exactly vertically but will also rotate. Such a movement of the support member has a negative influence on the riding conditions and also will probably bring about a higher wear of the inner air spring elements.

The effect of the differentiating feature mentioned above on the prior art arrangement as disclosed in D2 would thus be to improve the riding conditions and diminish the wear of the inner spring elements.

In the opinion of the board the well known lever theory clearly belongs to the general knowledge of the man skilled in the art of vehicle technology and once having recognised the above mentioned problem of greater wear of the inner spring elements and of non vertical movement of the support member in the prior art suspension arrangement the skilled man would simply apply this well known theory. He would recognise that in order to have a vertical movement of the support member when the wheel axle moves he would have to try to avoid the greater compression imposed to the inner air spring elements. The obvious way to achieve this is

to increase the resistance force of the inner spring elements which can be obtained either by increasing the working pressure of the inner air spring elements or to increase their working surface. Both these solutions are straight forward and the man skilled in the art would apply the one or other of the two according to the particular circumstances.

In the present case the solution defined in claim 1 is also disclosed in D4 so that the skilled man additionally has a direct indication towards that solution. As a matter of fact D4 discloses an asymmetrical support member with a smaller air spring element on the longer side and a bigger air spring element on the shorter side.

The subject-matter of claim 1 being the result of a simple application of the well known lever theory to solve a problem of the prior art suspension arrangement according to D2 and the specific solution additionally being disclosed in the prior art document D4, the inventive step requirement of Article 56 EPC in combination with Article 52(1) EPC is not fulfilled.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

A. Vottner

S. Crane