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D E C I S I O N
of 16 January 1997

Case Number: T 0160/95 - 3.2.1

Application Number: 88118404.8

Publication Number: 0315184

IPC: B60R 22/20

Language of the proceedings: EN

Title of invention:
Adjustable shoulder anchor mechanism

Patentee:
Nippon Seiko Kabushiki Kaisha

Opponent:
TRW Repa GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (main and first to third auxiliary requests, no; fourth auxiliary request, yes)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0160/95 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 16 January 1997

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 17 January 1995 rejecting the opposition filed against European patent No. 0 315 184 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: F. Gumbel
Members: S. Crane
G. Davies

Summary of Facts and Submissions

I. European patent No. 0 315 184 was granted on 2 June 1993 on the basis of European patent application No. 88 118 404.8.

II. The granted patent was opposed by the appellants on the grounds that its subject-matter lacked novelty and/or inventive step in the light of DE-U-8 709 069 (document D1).

III. The opposition was rejected by the Opposition Division with its decision posted 17 January 1995.

IV. An appeal against this decision was filed on 16 February 1995 and the fee for appeal paid at the same time.

The statement of grounds of appeal was filed on 3 May 1995. The appellants requested that the decision under appeal be set aside and the patent revoked in its entirety.

V. In a communication of the Board dated 22 January 1996 reference was made to "Handbuch der Fertigungstechnik, Band 5: Fügen, Handhaben und Montieren (1986)", pages 30 and 31 (document D2) as being illustrative of the common general knowledge of the skilled person. This document had been cited in the pre-grant examination proceedings.

VI. Oral proceedings before the Board were held on 16 January 1997.

At the oral proceedings the respondents (proprietors of the patent) submitted claims according to a main and first to fourth auxiliary requests on the basis of which they requested maintenance of the patent in amended form.

Claim 1 of the main request reads as follows:

"1. An adjustable shoulder belt anchor mechanism for use in a vehicle chassis (1) having an engaging hole (31),
comprising:
- an elongated adjustment base (2);
- an adjustable anchor (3) adapted to be guided along the adjustment base (2);
- a joint (4) connected to the adjustable anchor (3) to support a webbing belt (11);
- a hook section (20) at one end of the adjustment base (2) adapted to be inserted into the engaging hole (31), the hook section being folded at one end of the adjustment base (2) towards the chassis side, so that the folded portion of the hook section and the plane containing the engaging hole (31) intersect each other with a predetermined angle therebetween;
- the hook section (20) being provided with an enlarged section (21) at the tip portion thereof while the engaging hole (31) has a width (D2) in which the enlarged section (21) is inserted at the broadest section of the engaging hole (31);
characterized in
- that the elongated adjustment base (2) comprises a plurality of engaging openings (8) arranged in a longitudinal direction thereof; and
- that a lock pin (5) is provided in said adjustable anchor (3) and adapted to come into engagement with one of said engaging openings (8); and

- that a tapered section is formed in at least one of the folded portion and the engaging hole (31), so that the folded portion and the engaging hole are engaged with each other through the tapered section formed in at least one of them."

In claim 1 according to the first auxiliary request "at least" has been deleted from the last indented feature of the characterising clause. In claim 1 according to the second auxiliary request this last feature of the characterising clause has been amended to limit the tapered section being formed in the folded portion. In claim 1 according to the third auxiliary request the following feature has been added at the end of the characterising clause:

"- that said hook section (20) has an interlocking means to hold an edge of said vehicle chassis (1) on said peripheral portion of said engaging hole (31)."

The set of claims according to the fourth auxiliary request contains three independent claims 1, 2, and 3. The preamble of each of these claims corresponds to the preamble of claim 1 according to the main request. The respective characterising clauses of these claims read as follows:

Claim 1:

"characterized in
- that the elongated adjustment base (2) comprises a plurality of engaging openings (8) arranged in a longitudinal direction thereof;
- that a lock pin (5) is provided in said adjustable anchor (3) and adapted to come into engagement with one of said engaging openings (8);

- that a tapered section is formed in the engaging hole (31), so that the folded portion and the engaging hole are engaged with each other through the tapered section;
- that said hook section (20) has an interlocking means to hold an edge of said vehicle chassis (1) on the peripheral portion of said engaging hole (31);
- that interlocking means comprises an opening (26) in said hook section (20) to receive a projection (32) of said vehicle chassis (1), said projection (32) comprising the tapered section; and
- that said engaging hole (31) is comprised of an elongated opening and a smaller rectangular opening, and said projection (32) is projected into said rectangular opening."

Claim 2:

"characterized in

- that the elongated adjustment base (2) comprises a plurality of engaging openings (8) arranged in a longitudinal direction thereof;
- that a lock pin (5) is provided in said adjustable anchor (3) and adapted to come into engagement with one of said engaging openings (8);
- that a tapered section is formed in the folded portion and the engaging hole (31), so that the folded portion and the engaging hole are engaged with each other through the tapered sections;
- that said hook section (20) has an interlocking means to hold an edge of said vehicle chassis (1) on the peripheral portion of said engaging hole (31);

- that said interlocking means comprises a tapered section (23) of said hook section (20) in a rubbing relationship with said chassis (1) along said engaging hole (31); and
- that said engaging hole (31) is comprised of an elongated opening and a smaller trapezoidal opening which defines a tapered section."

Claim 3:

"characterized in

- that the elongated adjustment base (2) comprises a plurality of engaging openings (8) arranged in a longitudinal direction thereof;
- that a lock pin (5) is provided in said adjustable anchor (3) and adapted to come into engagement with one of said engaging openings (8);
- that a tapered section is formed in the folded portion, so that the folded portion and the engaging hole are engaged with each other through the tapered section;
- that said hook section (20) has an interlocking means to hold an edge of said vehicle chassis (1) on the peripheral portion of said engaging hole (31);
- that said interlocking means comprises a pair of arms (24) and the tapered section which is raised from said hook section (20) in an offset shape between said arms (24); and
- that said engaging hole (31) is a single rectangular opening."

Dependent claims 4 to 9 according to the fourth auxiliary request relate to preferred embodiments of the mechanisms defined in one or more of independent claims 1 to 3. The fourth auxiliary request also comprises amended columns 1 and 2 of the description.

The remaining columns of the description (3 to 6) and drawings (sheets 1 and 2) correspond to those of the granted patent specification.

VII. The arguments put forward by the appellants can be summarised as follows:

Although document D1 did not explicitly disclose that the adjustment base had plurality of openings which were selectively engaged by a lock pin on the anchor, these features were implicit for the skilled person since they were wholly conventional. This could be seen from what was said in the patent specification itself or from GB-A-2 176 091 (D3), which had been cited in the pre-grant examination proceedings. Novelty could therefore only possibly reside in the last feature specified in the characterising clause of claim 1 according to the main request. This feature was however ambiguous and could be interpreted as meaning that the tapered section on one part (folded portion or engaging hole) engaged the other part during the act of mounting the two parts together but not necessarily thereafter. Since this was also the case with the tapered sections shown in document D1, the subject-matter of the claim lacked novelty. However, even if the claim was interpreted as requiring this engagement after assembly, then its subject-matter would lack an inventive step since the elimination of play, and hence vibration, between assembled parts by the use of a tapered engagement surface on one of them was a measure which belonged to the common general knowledge of the person skilled in the art. To provide such a surface would involve only a trivial modification of the tools for manufacturing the known anchor mechanism.

The respective claims 1 according to the first, second and third auxiliary requests contained no additional features which would not follow from the application of the basic knowledge of the person skilled in the art when including a tapered section to reduce vibration in the anchor mechanism known from document D1.

No comments were presented with respect to the claims according to the fourth auxiliary request.

VIII. In reply the respondent argued substantially as follows:

In claim 1 according to the main request it was now made clear that the arrangement of a plurality of engaging openings in the adjustment base and a lock pin in the anchor was, although known per se, not disclosed in document D1, which represented the closest state of the art on which the preamble of the claim was based. There were clearly many other ways for selectively positioning the anchor on the base, so that it was wrong to suggest that this arrangement was implicitly disclosed in document D1.

The problem with which the invention was concerned was to provide an anchor mechanism which was cheap and simple to manufacture and to mount and which when mounted was free of vibrational noise.

The elimination of vibration by the use of a tapered section on one of the folded portion of the hook section and the hole with which the hook section was engaged was not suggested by the cited state of the art. In this respect, contrary to the assertions of the appellants, it was clear in the context that claim 1 of

the main request was referring to the assembled condition of the anchor mechanism, and not to some intermediate stage during assembly.

Document D2, which had been relied upon as showing an equivalent tapered section was concerned instead with the concept of "Passung", that is providing corresponding tapers on two parts to facilitate their assembly, and not with eliminating vibration between the parts. The person skilled in the art would therefore have no cause to consider the teachings of document D2 when seeking a solution to the technical problem with which he was faced.

Document D1 had in fact already proposed a solution to the elimination of vibration, namely the use of close tolerances. There was no reason why the person skilled in the art should reject what was taught there and consider the use of a tapered section instead. In particular, it was not clear where this tapered section should be arranged and there was the risk that providing it could increase costs and reduce the strength of the assembly.

The respective claims 1 of the first, second and third auxiliary requests contained features which served to provide an even clearer distinction over what was disclosed in the state of the art. These features resulted in an anchor mechanism which was particularly cheap and simple to manufacture.

Independent claims 1, 2 and 3 according to the fourth auxiliary request were directed to three particularly disclosed preferred embodiments. Each of these embodiments related to a specific structure which combined ease of manufacture with a safe and strong mounting of the adjustment base to the vehicle chassis.

Reasons for the Decision

1. The appeal complies with the formal requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC; it is therefore admissible.

2. *Main request*

In order to allow for the correct positioning of a vehicle seat belt with respect to occupants of different height and physique it has become commonplace to provide a shoulder anchor mechanism for the belt which is adjustable in its vertical position with regard to the vehicle chassis. Such a shoulder anchor mechanism may comprise an elongated base having a plurality of openings arranged in a line along its length, an anchor adapted to slide along the base, the anchor carrying a guide element or slip joint through which the belt passes and a lock pin for selectively engaging one of the openings in the base. The base is attached to the vehicle chassis, for example the door post, by means of upper and lower bolts. A prior art anchor mechanism of this type is shown in Figures 1 and 2 of the patent specification, which figures correspond closely to those of document D3. As stated in the patent specification at column 2, lines 7 to 9, the positioning of the known mechanism with respect to the chassis during mounting and the tightening of the two bolts is troublesome and time consuming.

Essentially the same comments about the known arrangement are made in document D1. This prior art document therefore proposes to replace the bolt at one end of the mechanism with simple interengageable coupling means, for example a hook section formed on

the base and a hole formed in the chassis. The patent specification indicates at column 2, lines 26 to 38 that the proposal of document D1 might reduce the cost of assembly but unless close tolerances were maintained in forming the hook section the mechanism would be susceptible to vibration and rattle. However, producing parts to that degree of accuracy would increase costs by more than would be saved through simplified assembly.

Accordingly, the technical problem with which the claimed invention is concerned is to provide an adjustable shoulder anchor mechanism which is cheap to produce and vibration-free.

In the course of the pre-grant examination proceedings Claim 1 was drafted in two-part form taking document D1 as the basis for its preamble. As was pointed out both in the contested decision and the communication of the Board this document does not explicitly disclose all of the features set out in the preamble of the claim, in particular that the base has a plurality of engaging openings arranged in the longitudinal direction thereof and that a lock pin is provided in the anchor for selective engagement with one of these openings. Initially it appeared as if respondents had accepted that the skilled person would implicitly recognise these features as also being present in the known mechanism.

They have however now made it clear that this is not their standpoint and have accordingly incorporated these features into the characterising clause of claim 1 of the main and auxiliary requests. On the other hand, they have transferred the first feature of the characterising clause of granted claim 1 into the preamble of claim 1 of their requests. Although they

had initially argued in the course of the appeal proceedings that this feature was not known from document D1 they have now implicitly recognised that it is, as will indeed become apparent from the following detailed analysis of what is disclosed in document D1 and the way the wording of present claim 1, when read in the light of the description, has to be interpreted.

Document D1 comprises three preferred embodiments. In the first (Figures 1 and 2) the base has a hook section in the form of a tongue which has a first part bent out of the plane of the base and then a second part extending in a plane parallel to the base. The tongue is inserted through a hole in the chassis and on displacing the base longitudinally a part of the chassis adjacent the hole is clamped between the second part of the tongue and the base. In the second embodiment (Figure 3), the base is formed at its lower end with two hook sections. Each of these is substantially L-shaped with one leg of the "L" being attached to the base and bent at right-angles to its plane, thus forming a gap between the other leg of the "L" and the base for receiving the part of the chassis adjacent the hole therein. In the third embodiment (Figures 4 to 6) the base has one hook section resembling that of Figure 3 and the chassis is formed with a corresponding hook section which engages a hole in the base member.

The free end of the tongue of the first embodiment is bent slightly away from the base member so as to facilitate the mounting of the base on the chassis. In the third embodiment chamfers are provided on the corners of the hook sections for the same purpose.

The patent specification also discloses three preferred embodiments. In the first of these (Figures 5a and 5b) the hook section is formed by bending the end of the base at right-angles to its plane. The free end of the hook section is of greater width than the part adjoining the base. At the junction between the wider and narrower parts there is a tapered section the width of which decreases in the direction towards the free end of the hook section. The engaging hole in the chassis is essentially hat-shaped with an elongated base section adjoining a trapezoidal opening, the side edges of which taper inwardly in the direction away from the base section. To mount the assembly, the enlarged section of the hook section is inserted through the elongated base section of the hole in the chassis. On displacing the base of the assembly the tapered section of the hook section engages the tapered side edges of the hole in the chassis. In the second embodiment (Figures 6a and 6b) the hook section comprises a wider end part and a narrower part connecting the end part to the base, this narrower part having two complementary bends such that the wider end part lies in a plane parallel to that of the base. The end part is also formed at either side with a short tongue extending towards the base. The engaging hole in the chassis is of simple rectangular shape. To mount the assembly the wider part of the hook section is inserted through the hole in the chassis so that, on displacing the base, the part of the chassis adjacent the hole is clamped between the tongues on the wider part and the sloping section of the narrower part of hook section extending between the two bends therein. The third embodiment (Figures 7a and 7b) is similar to the first embodiment. Here, however, the hook section does not have a tapered section and the side edges of the hole in the chassis are also not tapered. Instead a

hole is formed in the hook section which engages a tapered tongue extending from the chassis into the engaging hole from the side thereof opposite its elongated base section.

The significant differences between these three embodiments explain the very general language used in present Claim 1 to define the claimed invention. In particular it is apparent, having regard to the fact that the engaging hole of the second embodiment is of simple rectangular shape, that the statement in the first feature of the preamble clause that "the engaging hole has a width in which the enlarged section is inserted at the broadest section of the engaging hole" can only mean, in the context of such a rectangular hole, that its width is sufficient to allow insertion of the enlarged section of the hook section. This is certainly the case with the engaging holes shown in document D1. Furthermore, it is apparent that the hook sections shown in document D1 comprise a respective "enlarged section".

Having regard to the above, the Board is of the opinion that claim 1 according to the main request is correctly delimited with respect to document D1. There is no implicit disclosure in that document of the base having a plurality of engaging openings selectively engaged by a lock pin provided in an anchor. Although indeed this was a conventional arrangement, as is not denied by the respondents, there are clearly other possibilities for arranging the anchor on the base, so that the person skilled in the art would not automatically read these features into the disclosure of document D1. Furthermore, it is clear in the context, particularly when regard is had to the technical problem to be solved, that the claim is referring to the assembled condition of the anchor mechanism when it requires that

the "folded portion and the engaging hole are engaged with each other through the tapered section". This is not the case in document D1. There the chamfer on the folded portion of the hook section merely serves to facilitate insertion of the part of the chassis surrounding the engaging hole into the parallel-sided gap between the body of the base and the enlarged section of the folded portion of the base.

The subject-matter of claim 1 according to the main request is therefore novel.

Given that document D1 does not disclose how the anchor is to be selectively positioned on the adjustment base, the first step the person skilled in the art would have to take when seeking to put the teachings of the document into practical effect would be to choose a suitable arrangement for allowing this positioning. The known combination of a plurality of longitudinally spaced openings in the base and a lock pin in the anchor is an option which was freely available to him and the choice of it would be a routine matter. The person skilled in the art would also recognise that the parallel-sided nature of the gap which was to receive the edge of the vehicle chassis surrounding the engaging hole could lead, unless close tolerances were observed, to vibration and rattle. On the other hand it is apparent that such close tolerances would be difficult to achieve in a simple mass produced metal stamping. However, since the use of a taper as a simple technique for achieving a tight, vibration-free, fit between two parts is a measure which is well-known to the person skilled in the art he would immediately recognise that all that was necessary to avoid this difficulty would be to give the gap a wedge-shaped configuration, for example in the case of the embodiments of Figures 3 to 6 by forming the enlarged

section of the folded portion with a tapered edge. There are no technical reasons which could speak against doing this since such a tapered edge would effectively merely be an extension of the chamfer already proposed.

Document D2, which is an extract from a standard reference work, was cited by the Board (and had been cited during the pre-grant examination proceedings) merely to confirm, as has been argued by the appellants, that the use of a tapered fit was common general knowledge. The extract relates to joining parts together by pushing one into the other. It is stated in the second paragraph of page 31 that if the fitting surfaces of the parts are tapered in the direction in which the parts are moved to join them then the accuracy required for this movement is decreased and in the end position of the parts the joint is free of play. This clearly confirms what has been said in the preceding paragraph. It has never been intimated that the specific details of any particular joint configuration disclosed in document D2 were of any direct relevance to the assembly claimed. Thus it is not necessary here to go into the arguments presented by the respondents in an attempt to demonstrate that what was disclosed in document D2 in this respect was incompatible with the state of the art according to document D1 and to the requirements of the claimed invention.

The Board therefore comes to the conclusion that the subject-matter of claim 1 according to the main request does not involve an inventive step (Article 56 EPC).

3. *First, second and third auxiliary requests*

The respective features added to each of the claims 1 according to the first and second auxiliary requests would also be present in the obvious modification of the anchor mechanism known from document D1 referred to above. In particular, the tapered section would only be provided in the folded portion. As for the feature added to claim 1 of the third auxiliary request this is in fact known from document D1 since there the hook section also interlocks with a peripheral edge of the vehicle chassis surrounding the engaging hole therein.

Thus, the subject-matter of these claims also lacks inventive step.

4. *Fourth auxiliary request*

This request comprises three independent claims 1, 2 and 3. Claim 1 combines the features of granted claims 1, 2, 5 and 8 and is directed to the embodiment of Figures 7A and 7B, claim 2 combines the features of granted claims 1, 2, 3 and 15 and is directed to the embodiment of Figures 3, 4, 5A and 5B and claim 3 combines the features of granted claims 1, 2, 4 and 6 and is directed to the embodiment of Figures 6A and 6B.

There are no objections to these claims under Articles 123(2) or (3) EPC. Similarly, there are no objections to the amendments made to the dependent claims and the description as a consequence.

Each of the independent claims specifies a particular structure which is significantly different from any of the structures disclosed in document D1. In the opinion of the Board it is not possible to argue that any one of the claimed structures can be derived from the state of the art in an obvious manner and indeed the appellants have not attempted to do so.

The Board therefore comes to the conclusion that the documents according to the fourth auxiliary request form a suitable basis for maintenance of the patent in amended form.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The main request and auxiliary requests 1 to 3 are rejected.

3. The case is remitted to the first instance with the order to maintain the patent on the basis of the documents according to the fourth auxiliary request, namely claims 1 to 9 and columns 1 and 2 of the description submitted at the oral proceedings together with columns 3 to 6 of the description and drawings sheets 1 and 2 as granted.

The Registrar: The Chairman:

S. Fabiani F. Gumbel