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19

Bezeichnung der Erfindung: Obstacle protection arrangement
Title of invention:
Titre de l'invention :

Klassifikation / Classification / Classement EOIF 15/00

ENTSCHEIDUNG / DECISION

vom / of / du 22 December 1987

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent / Titulaire du brevet : STAAT DER NEDERLANDEN

Einsprechender / Opponent / Opposant : ENERGY ABSORPTION SYSTEMS, Inc.

Stichwort / Headword / Référence :

EPÜ / EPC / CBE Articles 54, 56 EPC

Kennwort / Keyword / Mot clé : Novelty, Inventive step

Leitsatz / Headnote / Sommaire

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Case Number : T 89 / 86 - 3.2.2

D E C I S I O N
of the Technical Board of Appeal 3.2.2
of 22 December 1987

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Decision under appeal : Decision of Opposition Division of the European Patent Office dated 17 January 1986 rejecting the opposition filed against European patent No. 42645 pursuant to Article 102(2) EPC

Composition of the Board :

Chairman : C. Maus
Members : C. Andries
W. Moser

Summary of Facts and Submissions

I. European patent No. 42 645 comprising six claims was granted to the Respondent on 11 January 1984 in response to European patent application No. 81 200 664.1, filed on 12 June 1981 and claiming the priority of a previous application of 24 June 1980.

II. The Appellant filed an opposition against the European patent requesting that it be revoked. The opposition was mainly based on the following documents:

- US-A-3 982 734 (D1)
- Documents Att. 03 to Att. 07 relating to a so-called "GREAT" system, which was, according to the Applicant, publicly prior used (D2).

III. By its Decision, dated 17 January 1986, the Opposition Division rejected the opposition.

IV. The Appellant lodged an appeal against the Decision on 12 March 1986 and paid the appeal fee on the same date. He requests that the decision under appeal be set aside and the patent revoked. In his Statement of Grounds, filed on 14 May 1986, the Appellant raises the following objections:

- Claim 1 would be unclear and not properly delimited against the cited prior art;

- the introductory portion of the patent specification would be obscure and would not properly define the technical problem to be solved;

- the objects of the invention would be already obtained by the cited prior art documents;

- the embodiment according to the GREAT-system (D2), which was the closest prior art, would comprise all the features mentioned in Claim 1 of the patent.

Another document (Att. 08-D3) was simultaneously filed by the Appellant as evidence for another pretended prior use.

V. The Respondent contested the above objections and requested the disregard of the aforesaid pretended public prior use. He furthermore clarified the subject-matter of the invention with respect to document D1.

VI. During the oral proceedings held on 22 December 1987, the Respondent requested that the appeal be dismissed and that the patent maintained on the basis of the following documents:

description: page 2 submitted in the oral proceedings;
remaining description as granted;

Claim 1 as granted with the insertion of the word "only" in line 47 before "the" and the term "directly" behind "are" in line 51;

Claims 2 to 6 and drawings as granted.

Claim 1 reads now as follows:

"Arrangement for protecting an obstacle, the arrangement comprising a deformable spatial structure wherein a dissipation of energy is brought about during a deformation resulting from a collision with a moving object such as a road vehicle, which arrangement is composed of a series of

segments (A) which are interconnected - in the direction of motion as anticipated - and which are each comprised of at least one portal-shaped support member (G) standing on the ground and positioned transversely to said direction, as well as of a stabilising structure (N, F) fastened thereto and provided with deformation elements (B), a flank member (C) being affixed on both sides of each segment, characterised in that, viewed in the direction of motion as anticipated - only the rear support member (G) of the arrangement is fastened to a foundation (L), only the front support member (G') being disposed in a horizontal guideway (H) allowing displacement in the longitudinal direction only, and in that the segments (A) are directly fixedly coupled to one another, so that the whole arrangement behaves like a rigid girder, in respect of lateral impacts."

The Respondent questioned the accessibility of the arrangement of the pretended prior use as indicated by the document Att. 03 to Att. 07 (GREAT-System-D2) and, therefore, as to whether it could be considered as prior art. He emphasised the ability of the specific rigid backbone structure to cope with side or lateral collisions.

The Appellant furthermore raised the following objections:

- The words "only" and "directly" added now to Claim 1 would neither be disclosed in the application as originally filed nor in the granted patent;

- US-A-2 088 087 (D4) would describe deformable elements which are fixed to each other;

- more rigidity would not be obtained by means of the features in Claim 1, but could only be obtained with the features mentioned in Claim 2;

- guiding means would be known from US-A-3 602 151 (D5);

- the subject-matter of Claim 1 did not involve an inventive step with respect to the combination of the teachings of documents D1, D4 and D5.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 1(1) and 64 EPC. It is therefore admissible.

2. There are no formal objections under Article 123 EPC to the present text of the patent since the requested amendments are supported by the original disclosure and do not extend the protection conferred.

2.1 Present Claim 1 differs from granted Claim 1 in that the words "only" and "directly" have been added, in order to make it more clear that "only the front support member is disposed in a horizontal guideway" and that "the segments are directly fixedly coupled to one another".

2.2 The Board cannot accept the objection made by the Appellant that the words "only" and "directly", now added to the granted Claim 1, are neither present nor implicitly contained in the application as originally filed or in the granted patent. On the contrary, taking into account the text of Claim 1 as granted, especially with regard to the whole content of the application as originally filed as well as of the granted patent, it becomes clear that "only" the front support member (A', G') is disposed in a

horizontal guideway (H). There are no indications in the content of the application as originally filed and of the granted patent that, besides the ground rail (H) and the supporting foundation (L), other points of support are used. The feature that the segments are "directly" coupled to one another follows also clearly from the whole content of both the application as originally filed and the granted patent. Also, in this respect, no other indications can be found in the application as originally filed.

2.3 Granted Claims 2 to 6 remain unamended.

2.4 The claims, therefore, comply with Article 123(3) EPC.

3. With respect to the objections of the Appellant relating to lack of clarity of Claim 1 and to a not-correct two-part form of Claim 1, the Board would like to point out that these objections are no grounds for opposition as defined in Article 100 EPC. By virtue of Rule 66(1) EPC, these grounds are irrelevant in the appeals procedure as well.

Despite this, the Board would like to remark that Claim 1 as worded now, especially if it is interpreted in the light of the description and the drawings, is clear for a man skilled in the art.

At least, the description and the drawings unequivocally indicate that

- only the rear support member cannot be moved in any direction;
- only the front support member is always guided in the longitudinal direction during a short instance after an impact.

Concerning the rigid girder mentioned in Claim 1, there cannot be any doubt that this girder is formed by the whole

arrangement and that it has only two points of support; the horizontal guideway and the supporting foundation (column 2, lines 7 and 8; column 6, lines 56 to 59).

Moreover, the indication "so that the whole arrangement behaves like a rigid girder, in respect of lateral impacts" is not only a description of the effect of the technical measure of directly coupling the segments to each other, but it also implicitly indicates to a man skilled in the art which coupling requirements have to be fulfilled to obtain a rigid girder in respect of lateral impacts.

4. With respect to the pretended public prior use presented for the first time during the appeal procedure the following can be stated:

The new pretended public prior use supported by document D3 (Att. 08), filed by the Appellant with the Statement of Grounds, relates to an arrangement for protecting an obstacle which is similar to the arrangement according to documents D2 (Att. 03 to Att. 07) and which was cited by the Appellant because it would be easier to hear a German witness on the subject of that pretended prior use. Although document D3 is filed too late and is no more relevant than documents D2, the Board has decided that in this specific case, document D3 can be considered by the Board of its own motion (Article 114(1) EPC).

5. Novelty

5.1 During the oral proceedings the Appellant asserted that the subject-matter of Claim 1 cannot be considered to be novel with respect to the embodiment according to the GREAT-system (documents D2).

The Board, however, cannot adopt this opinion because in the embodiment according to the GREAT-system the front support member is not disposed in a horizontal guideway allowing displacement in the longitudinal direction only. It is not necessary to give the reasons in detail why the restraining cable (D2: Att. 03, Feature 6) cannot act as a horizontal guideway in the sense of Claim 1, since both means have completely different characteristics.

5.2 The same applies with respect to document D3 (Att. 08) which shows an arrangement for protecting an obstacle provided with support members, in which the front support member is also not disposed in a horizontal guideway.

5.3 US-A-3 982 734 (D1) describes an impact barrier comprising energy absorbing means (container 34), which rests on a base forming means which is disposed adjacent to buffer beams and between successive support plates (Claim 1, column 6, lines 24 to 26). Therefore, US-A-3 982 734 does not disclose a stabilising structure, provided with deformation elements, which is fastened to its corresponding support member.

5.4 The other prior art documents cited in the patent specification or during the opposition procedure do not disclose the protecting arrangement according to Claim 1 and will not be discussed in this respect, since the Appellant did not dispute the novelty of the subject-matter of Claim 1 with regard to this state of the art.

5.5 For the reasons given above, the subject-matter of independent Claim 1 is novel within the meaning of Article 54 EPC compared to the cited documents.

6. It remains therefore to be determined whether the subject-matter of Claim 1 involves an inventive step in the light of the cited prior art.

6.1 The invention relates to an arrangement for protecting an obstacle, comprising a deformable spatial structure wherein a dissipation of energy is brought about during a deformation resulting from a collision with a moving object such as a road vehicle.

Such an arrangement is known from document D1. The arrangement according to this document (D1) comprises (see in particular Figures 7 to 11) a series of elements, which are interconnected in the direction of motion and which are composed of a portal-shaped support member (diaphragm: 51, 53) standing on the ground and positioned transversely to said direction and flank members (54, 56) affixed on both sides of said support member (Figure 10: nuts 57 and studs 58). Only the rear support member (see left-hand portion of the Figures 7 and 8) of the arrangement is fastened to a foundation. The elements (support members and flank members) are connected to one another by the flank members (Figures 9 and 10: bolts 59 and slots 61).

Between two successive support members (see Figure 7), energy absorbing units (62) are disposed. According to Claim 1 of document D1, these units rest on base forming means (brackets 63). As Figures 7 and 9 equally do not show any clamping means between the units (62) and their corresponding support members, the Board cannot accept the opinion of the Appellant that the units are clamped between or even fastened to their corresponding support members.

The support members are secured to the roadway (column 5, lines 8 and 9) for restraining transverse movement of said support members by means of chains or cables, so that an

entity exists which is fixed to a foundation by means of one of its ends and restrained in the transverse direction on different other points in the event of an impact from the side.

Such an entity can at most be considered as being a beam which is fixed at one of its ends and furthermore supported in a number of other points with respect to lateral movement.

6.2 In the new section of the description, substitution for column 1, lines 51 to 57 of EP-B-0 042 645 (first paragraph), it is indicated that the stiffness in the transverse direction of the protecting arrangement according to D1 is mainly obtained by the flank members and by the chains or cables, and that the whole structure is kept together by the flank members.

The person skilled in the art recognises immediately that the lateral stiffness of such an embodiment is not satisfactory in every case.

6.3 Therefore, the technical problem to be solved consists of providing the obstacle protecting arrangement with a sufficient lateral stiffness.

6.4 The Board is convinced that this problem is solved by the features mentioned in Claim 1. By connecting the support members to their corresponding stabilising structures and by connecting these units (support member-stabilising structure) directly to each other, a rigid beam is formed, without the help of flank members, the lateral stiffness of which is increased to such a degree that only two points of support are sufficient.

The argument of the Appellant, that only a combination of the features according to Claims 1 and 2 can solve the indicated problem, cannot be followed by the Board, since the features mentioned in Claim 1 are sufficient for the construction of a rigid backbone structure. The requirements which the coupling of the segments, consisting of a support member and a stabilising structure, must fulfil, are clearly defined by the wording "so that the whole arrangement behaves like a rigid girder, in respect of lateral impacts". For a person skilled in the art, other couplings than the means characterised in Claim 2 are at hand as well.

The objection of the Appellant that the problem underlying the invention is already solved by the cited prior art is of no importance in view of the patentability of the subject-matter of Claim 1, because the problem to be solved need not be new and inventive. Consequently, another new and inventive solution of a known problem can be patentable too.

The further argument of the Appellant that, according to the teaching of EP-B-0 042 645, the flank members are a part of the segments is not correct. On the contrary, from the whole content of EP-B-0 042 645 it follows clearly that the segments (A) do not comprise flank members (C), (Claim 1; column 5, lines 14 and 15).

6.5 From the foregoing discussions it follows that document D1 teaches to form a beam with the help of support members (diaphragms) and flank members, to fasten one end of the beam to a foundation and, furthermore, to support the beam in different places in order to limit lateral movements.

6.6 The cited prior art could not suggest to amend the beam according to document D1 as defined in Claim 1 of EP-B-0 042 645 in order to increase its lateral stiffness.

In this respect, the Appellant only asserted that a teaching to increase the stiffness of the arrangement could be found in document D4 and that a guidance in the longitudinal direction was commonly known in the same technical field, for example, as shown, for example, in document D5. The combination of the teaching of documents D1, D4 and D5 would lead a person skilled in the art to an arrangement according to Claim 1.

Apart from the fact that the bumper-arrangement according to document D4 is composed of a number of impact resisting metal cells attached together by brackets, these cells behave like a girder which is fixed only at one end. In order to increase the lateral stiffness of the arrangement, document D4 proposes to space the two brackets connecting the cells in a proper relation to each other.

From document D5, a person skilled in the art learns to guide each segment of an energy dissipating construction on rail means. The teaching of this document therefore points to a different direction, because a plurality of supporting points is provided (one for each segment) which restrain lateral movements. Furthermore, the arrangement according to this document is designed to cope with head-on collisions (trains) and not with lateral collisions. It is therefore doubtful as to whether a skilled person wanting to increase the lateral stiffness of an arrangement according to document D1 would take into account the teaching of a document which does not relate at all to lateral impacts.

In order to obtain a sufficient lateral stiffness, the Respondent has chosen a different solution by using a rigid girder, as defined in Claim 1, which during a lateral impact has only two support points, whereas in the state of the art different beams are present which, however, have a plurality of support points during a lateral impact.

It is neither suggested in the known prior art, nor is it obvious for a person skilled in the art to increase the lateral stiffness by, among others, a decrease of the number of laterally restraining support members. On the contrary, the lateral stiffness is decreased by eliminating a plurality of lateral restraints obtained by the anchor chains (23 and 32) in the arrangement according to document D1.

6.7 The documents D2 (GREAT SYSTEM) and D3 show, in principal, apart from the restraining cable and the chain rails, an arrangement as disclosed in document D1.

The GREAT system (GS) is an arrangement for protecting an obstacle comprising a deformable spatial structure wherein energy dissipation occurs during a deformation resulting from a collision with a moving object. The spatial structure is composed of a series of elements which are interconnected with each other by means of "thrie beam fender panels" (Att. 03 and Att. 05) and which comprise one portal-shaped support member (diaphragms: Att. 03 and tension strut backup: Att. 06).

Deformation elements in the form of "hi-dri cartridges" (Att. 03) rest on brackets fixed to the diaphragms (Att. 06: bracket 14).

Only the tension strut backup is apparently fastened to a foundation (Att. 06: element 1).

The other support members are connected to the roadway by chains for restraining transverse movement of said support member in the event of an impact from the side. Additionally, the "so-called" first and second diaphragms (Att. 03: plan view, G1 and G2; Att. 07) are more or less retained by a restraining cable (Att. 03:6) and by restraining cable guides (Att. 04:2 and Att. 07).

A first support member (Att. 03 and 07: elevation views: first support member on the right-hand side) however is not guided by anything.

The different diaphragms are located between two chain rails (Att. 06:2; Att.03 and 07: elevation views) in such a manner that, in case the diaphragms should move in the transverse direction, they are, after a short movement, hindered by the chains or rails respectively from further moving in that direction.

Therefore, the arrangements according to D2 or D3 are beams which are fixed to a foundation at one end (tension strut backup) and which are restrained with respect to a transverse movement during an impact from the side in different other points. Such a beam cannot suggest a rigid girder as defined in Claim 1 of the EP-B-42 645 which has only two support points (the front and the rear support member).

In this circumstance, it is unnecessary to decide the question as to whether the arrangements shown in documents D2 and D3 have been prior used in public.

6.8 To sum up, it can be said that none of the cited documents suggests to a skilled person the solution outlined by the features of Claim 1. Consequently, in view of obtaining a sufficient lateral stiffness, it is not obvious to use a

rigid girder such as claimed in Claim 1, which, during a lateral impact, has only two support points, namely the front and the rear support members, in opposition to the different beams known in the prior art which possess a plurality of support points during a lateral impact.

6.9 Therefore, the subject-matter of Claim 1 involves an inventive step within the meaning of Article 56 EPC.

7. The amendments in the description relate only to a more precise description of the state of the art, a clearer definition of the technical problem to be solved and an adaptation of the description to the newly filed Claim 1. These amendments do not give rise to any objection.

8. With the valid Claim 1 and dependent Claims 2 to 6, which concern preferred embodiments of the arrangement according to Claim 1, and the modified description the patent can be maintained.

9. Since, in the present case, the effect on the scope of the protection conferred by the patent brought about by the amendments in the description and in Claim 1, made during the oral proceedings, was easy to perceive and since, on the other hand, the parties gave no indication during the oral proceedings that they needed more time in order to examine these amendments, the Board was able to dispense with informing the parties in accordance with Rule 58(4) EPC (Decision T 219/83, OJ EPO 7/1986, 211).

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the European patent on the basis of the following documents:

description, page 2, submitted in the oral proceedings
remaining description as granted;
Claim 1 as granted with the insertion of the word "only" in line 47 before "the" and of the term "directly" behind "are" in line 51; Claims 2 to 6 and drawings as granted.

The Registrar The Chairman

F.Klein C.Maus