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**Datasheet for the decision
of 20 February 2018**

Case Number: T 0933/15 - 3.2.01

Application Number: 03024926.2

Publication Number: 1415882

IPC: B61F5/52, B61F3/00

Language of the proceedings: EN

Title of invention:
Truck for railroad car

Patent Proprietor:
KAWASAKI JUKOGYO KABUSHIKI KAISHA

Opponent:
Bombardier Transportation GmbH

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:



Beschwerdekammern

Boards of Appeal

Chambres de recours

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Case Number: T 0933/15 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 20 February 2018

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
24 February 2015 concerning maintenance of the
European Patent No. 1415882 in amended form.**

Composition of the Board:

Chairman G. Pricolo
Members: W. Marx
O. Loizou
H. Geuss
S. Fernández de Córdoba

Summary of Facts and Submissions

- I. The appeal of the opponent is directed against the decision of the opposition division to maintain European patent No. 1 415 882 in amended form on the basis of auxiliary request 3 filed during the oral proceedings. The subject-matter of claim 1 according to this request was found to involve an inventive step over the closest prior art V2 (prior use of vehicles delivered by the ABB Henschel AG to the Berliner Verkehrsbetriebe).

- II. As regards prior use V2, the opposition division came to the conclusion after hearing the witness Ms Rother that it was sufficiently proven that vehicles with the technical characteristics according to drawings D2.2 and D2.3 (work drawing Nr. 0785825-75.0966-0, "Aufhängung für magnetische Zugbeeinflussung") were delivered to the Berliner Verkehrsbetriebe in 1995 and became publicly available before the priority date of the patent in suit. However, the opposition division decided not to further consider the alleged prior use V3 (prior use of a vehicle delivered by the opponent to the Kölner Verkehrsbetriebe AG; see D3.2: work drawing Nr. 5423-1-431-003, "Traverse De Tete Avant"), since it did not prejudice the maintenance of the patent in suit, and not to hear the witness Mr Wilfried Sterck.

- III. Together with its grounds of appeal filed with letter dated 6 July 2015 the appellant offered again to hear as witness Mr Wilfried Sterck and, in addition, Mr Holger Natzke with regard to the alleged prior use V3.

- IV. Oral proceedings before the board took place on 20 February 2018.

The appellant (opponent) 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.

V. Claim 1 as maintained by the opposition division is a combination of granted claims 1 and 2 and reads as follows (broken into a feature analysis used by the appellant):

(M1) A truck (1) for railroad car (T1) comprising:

(M1.1) an H-shaped, when viewed in plan, truck frame (2) including

(M1.1.1) side frames (2a, 2b) extending substantially in parallel at both right and left sides of the truck (1) for railroad car (T1),

(M1.1.2) and a transom (2c) connected to intermediate portions of the side frames (2a, 2b) the intermediate portions being located substantially at a center in a longitudinal direction of a railroad car;

(M1.2) an end beam (3) extending in a lateral direction of the railroad car and connected to end portions of the right and left side frames (2a, 2b) of the truck frame,

characterized in that

(M1.3) an instrument (A) is supported by the end beam (3); and

- (M1.4) deformation absorbing means (6, 7) are provided at both sides of a portion of the end beam (3) where the instrument (A) is supported, for absorbing torsional force acting on the end beam (3),

- (M2.1) the end beam (3) includes right and left support brackets (3a, 3b) whose outer ends are connected to the right and left side frames (2a, 2b), and

- (M2.2) a center bar (3c)
 - (M2.2.1) connected to inner end portions of the right and left support brackets (3a, 3b) through the deformation absorbing means (6, 7) and
 - (M2.2.2) having an instrument attachment portion (4), and

- (M2.3) each of the deformation absorbing means is constructed of a rubber bush (6, 7) including
 - (M2.3.1) an outer cylindrical member (6b, 7b),
 - (M2.3.2) a center shaft member (6c, 7c), and
 - (M2.3.3) an elastic rubber member (6a, 7a) provided between the outer cylindrical member (6b, 7b) and the center shaft member (6c, 7c),

- (M2.4) the outer cylindrical members (6b, 7b) are respectively connected to end portions of the center bar (3c), and

- (M2.5) the center shaft members (6c, 7c) are respectively connected to the right and left support brackets (3a, 3b).

VI. The appellant (opponent) essentially argued as follows:

The design of the vehicle according to V3, as far as it was relevant with regard to the contested patent, was described in particular in document D3.2, and the witnesses were offered to prove that the vehicle was publicly available before the priority date of the contested patent. Current claim 1 combined the features of granted claims 1 and 2. V3 disclosed a deformation absorbing means according to claim 2 as granted. As set out in the following, the vehicle according to V3 showed already all features of current claim 1 except for feature M1.3 and part of feature M1.4, so the relevance of V3 was wrongly denied in the contested decision. V3 was *prima facie* highly relevant for the inventive step of the subject-matter of current claim 1, so it should have been admitted in opposition proceedings. Since the opposition division did not hear the witnesses, the case should be remitted in the event the relevance of V3 was acknowledged by the board.

The vehicle according to V3 had an H-shaped truck frame including side frames, a transom and an end beam according to features M1 to M1.2 (see in particular D3.2). The end beam included left and right support brackets screwed to respective side beams. Each support bracket was formed by a flange plate carrying in its centre a bolt, and the outer ends of the brackets were connected to the side frames (feature M2.1). The end beam also included a center bar (feature M2.2) which was connected to the left and right support brackets via a screw connection. This connection was established by the bolt, which was threaded at its free end and connected via an inner end portion of the flange plate to the side frame (feature M2.2.1). A cylindrical rubber bush - comprising an outer cylindrical member

fixed to an end portion of the center bar, a center shaft member formed by the bolt, and a rubber element in between - was fixed via a nut screwed to the bolt (features M2.3.1 to M2.5). The rubber bushes provided at both sides of the center bar absorbed a torsional force acting on the end beam, thereby representing a deformation absorbing means within the meaning of feature 2.3 and the first part of feature M1.4. The center bar showed an attachment portion which was also suitable for attaching an instrument (feature M1.3). Thus, all the features M2.1 to M2.5 of granted claim 2 were known from V3.

Claim 1 was not very specific as regards the support brackets, so the features shown in V3 could be read on claim 1. The only feature which was not derivable from V3 was an instrument (such as antennas, magnets) attached to the attachment portion of the center bar (feature M1.3 and part of feature M1.4), i.e. the only difference between the design of V3 and the subject-matter of current claim 1 was the function of the component supported by the end beam.

Starting from V3 as the closest prior art, the objective problem was to realise a simple and space-saving assembly of an instrument on the truck. The skilled person, already in view of his knowledge, would use the center bar of V3 as a support for an instrument and therefore arrive at the subject-matter of claim 1. Moreover, the skilled person would take into account prior use V2 which showed an end beam supporting in its center portion an instrument of the magnetic train control system.

Starting from V2 as the closest prior art, features M1 to M1.4 and M2.1 to M2.2.2 were known. The subject-

matter of claim 1 was distinguished from V2 by the torsional decoupling of the connection between the center beam and the support brackets, which in V2 was realised by a two-bolt-connection comprising elastic metal-rubber-elements in order to take up torsional movements around the axis of the center bar. This torsional decoupling between center bar and support brackets was rather complex in design and assembly, so the objective problem to be solved was to realise a simpler torsional decoupling which was easier to assemble. Such design of the connection between support bracket and center bar was known from V3. In V3, only one screw formed by a threaded bolt was required, which was connected via a flange plate as support bracket to the side frame and included a cylindric elastic bush. This would lead to the subject-matter of claim 1 as maintained in opposition proceedings.

The skilled person would combine V2 and V3. D2.2 showed torsion absorption means, i.e. rubber elements taking up some deformation in order to provide for some tilt of the end bar which supported an instrument. A design providing this function was also known from D3.2, which showed a center bar fixed in all directions and allowed to tilt about the longitudinal axis of the running gear. Even torsion about the transverse axis was possible. Such established solution might have not been modified for a long time, but this did not prevent the skilled person from looking for a new, alternative solution. Replacing V2's support brackets was not required, since the skilled person could simply couple the torsional decoupling means of V3 via the flange plate to the support bracket of V2. As regards the respondent's arguments against the obviousness of the combination of V2 and V3, it was noted: V3 also provided a deformation decoupling in the longitudinal

direction, showed a simple solution saving the extra step of pre-setting the absorption capacity in the assembly process, and pre-assembly of the center bar including rubber bushes was possible before sliding the bushes onto the bolts. Therefore, if prior use of the vehicle according to V3 was established, it would prejudice the inventive step of current claim 1.

VII. The arguments of the respondent may be summarised as follows:

The opposition division was right in stating that V3 did not disclose right and left support brackets and in deciding not to consider V3. D3.2 showed a plate for mounting the end beam. Moreover, current claim 1 mentioned outer end portions of the support brackets which were connected to the right and left side frames, and inner end portions of the support brackets which were connected to the center bar, i.e. to a bar located in the center. The brackets could only have outer and inner end portions in case that they extended in the lateral direction with the respective connecting points being on the inner and outer side, respectively, which was not the case with the plate of V3.

Even if V3 were to be considered, there was no reason to revoke the contested patent as maintained by the appealed decision:

When starting from the teaching of V3 (although not discussed in first-instance proceedings), it was not obvious to arrive at the subject-matter of current claim 1 by combining V3 with V2, because the end beam of V2 - replacing the end beam of V3 (which did not show support brackets) - would be mounted to the side frames of V3 together with the respective deformation absorbing means of V2. In order to support an

instrument, the skilled person learned from V2 (see textual indications in drawing D2.2) that further means had to be applied, so he would apply a two-bolt-connection.

When starting from the teaching of V2, the skilled person had no reason for combining it with V3 because the "two-bolt-coupling" according to V2 had not been changed for nearly 20 years. Even considering replacement of the deformation absorbing means of V2 by the absorbing means of V3, the skilled person would use the connecting plate according to V3 and therefore no support brackets. Moreover, such modification was not obvious for the following reasons: Firstly, the rubber bush of V3 did not take up or absorb forces in three directions, since the rubber element shiftable in relation to the bolt allowed for a movement in the longitudinal direction. Secondly, adjustment of the absorption capacity in two directions, as taught by V2, was lost when replacing V2's two-bolt-connection by V3's rubber bush. Thirdly, according to the contested patent (paragraph [0013]) the object of the invention was not only to simplify the structure, but also to assemble the rubber bush before attaching the end beam to the truck, which was not possible in V3.

Reasons for the Decision

1. *Inventive step (Art. 56 EPC)*
 - 1.1 The appellant argues lack of inventive step either starting from prior use V2 in combination with prior use V3, or starting from V3 in combination with V2. According to the contested decision, the opposition division found that vehicles according to V2 became publicly available before the priority date of the

patent in suit, whereas the alleged prior use V3 was not considered by the opposition division.

1.2 Under the assumptions that the allegedly prior-used vehicle according to V3 was available to the public and that the prior-used vehicle was exactly as described by the appellant, the board finds that the subject-matter of claim 1 as maintained by the opposition division involves an inventive step, irrespective of whether V2 or V3 is taken as the closest prior art.

1.2.1 As found by the opposition division, V2 discloses a truck comprising the features M1 to M1.4 of claim 1 as granted. Moreover, V2 shows an end beam which includes right and left support brackets whose outer ends are connected to the right and left side frames, and a center bar connected to inner end portions of the right and left support brackets through the deformation absorbing means and having an instrument attachment portion (features M2.1 to M2.2.2). This was not disputed by the parties.

V2 does not show a deformation absorbing means formed by a rubber bush as specified by features M2.3 to M2.5. In V2 (see D2.2), a two-bolt-connection comprising elastic elements is provided instead for connecting a center bar of the end beam to the inner end portions of right and left support brackets, thus realising a deformation absorbing means which can take up torsional movements around the axis of the center bar, i.e. allowing the center bar to tilt around the longitudinal axis of the truck.

The torsional decoupling between the center bar and the support brackets known from V2 might be rather complex in design and assembly, as argued by the appellant.

However, the board does not follow the appellant in that the skilled person would apply the teaching of V3 to V2 when looking for a simpler torsional decoupling which is easier to assemble. The question at stake is not whether such modification is possible and could be done, or that nothing prevented the skilled person from looking for an alternative solution, as argued by the appellant, but whether the skilled person **would (not only could)** be prompted to replace the two-bolt-connection of V2 by a rubber bush as known from V3. Admittedly, the rubber bush of V3 also provides for some elasticity in case of a tilt of the end beam around the longitudinal axis of the truck and absorbs torsional forces acting about the axis of the end beam. However, the board finds that the modification required does not consist in merely replacing one constructional element by another element providing exactly the same functionality.

The modification proposed by the appellant to couple the rubber bush of V3 via the flange plate of V3 to the support bracket of V2 would require modification of the support bracket so that the flange plate could be fixed thereto via screws, in particular a support bracket providing mounting areas large enough to provide sufficient space for mounting V3's flange plate thereto, which includes a bolt fixed between screws onto the flange plate. Moreover, bearings had to be provided in the end portions of the center bar of V2 to support the rubber bush. Simply replacing the center bar of V2 by the end beam of V3 does not work, since the lateral extensions do not match. The board cannot find that the skilled person on the basis of the workshop drawings D2.2 and D3.2, which show the constructional details of V2 and V3, would contemplate

the modification proposed by the appellant without having knowledge of the claimed invention.

The board even finds that some functionality of the decoupling means when replacing the two-bolt connection of V2 by V3's rubber bush would be lost, which also speaks against the obviousness of the modifications required when trying to combine the teaching of V2 with V3. In contrast to the design of V2, the rubber bush according to V3, which sits on a bolt extending in the longitudinal direction of the truck, has only limited capacity in taking up forces in this direction, due to the limited shear forces that can be provided by the rubber element. In V2, a screw connects a plate of the support bracket via interposed elastic elements with a connecting portion provided at the outer end of the center bar, so that movement in the longitudinal direction is limited and at the same time dampened by elastic elements. The appellant's argument, that the extra step of pre-setting the absorption capacity (by tightening the two screws of the deformation absorbing means) in the assembly process of V2 could be saved when using a rubber bush, is no proof to the contrary, because it also means that the advantage of adjusting the absorption capacity in two directions independently from each other would be lost. Moreover, when combining V2 with V3 as discussed above, the assembly process would require to handle one additional part - namely the flange plate - in addition to the support brackets, the deformation absorbing means and the center bar. Therefore, even assuming that pre-assembly of center bar and rubber bushes was possible, the board cannot see a beneficial effect in the whole assembly process.

Therefore, the board comes to the conclusion that starting from V2 and taking into account V3 the skilled

person would not arrive in an obvious manner at the subject-matter of current claim 1.

1.2.2 When starting from V3 as the closest prior art, assuming that it is proven that a truck comprising an H-shaped truck frame including side frames, a transom and an end beam according to features M1 to M1.2 was available to the public, the appellant acknowledged that an instrument as specified in feature M1.3 and in part in feature M1.4 was not known from V3. The board also agrees with the appellant that V3 discloses deformation absorbing means as specified in the first part of feature M1.4 and further in features M2.3 to M2.4, namely constructed of a rubber bush including an outer cylindrical member, a center shaft member, and an elastic rubber member provided between the outer cylindrical member and the center shaft member, wherein the outer cylindrical members are respectively connected to end portions of the center bar, which is specified in feature M2.2. The attachment portion provided in V3 for an engine connecting rod might also be seen as an instrument attachment portion, as required by feature M2.2.2.

It was disputed whether the subject-matter of current claim 1 is only distinguished from V3 by features M1.3 and part of feature M1.4 relating to an instrument supported by the end beam, i.e. whether right and left support brackets as specified in features M2.1, M2.2.1 and M2.5 are already known from V3. Feature M2.1 further specifies the end beam of feature M1.4, i.e. "an end beam **extending in a lateral direction** of the railroad car and connected to end portions of the right and left side frames of the truck frame". According to features M2.1 and M2.2.1 (with M2.2), "the end beam includes **right and left support brackets** whose **outer**

ends are connected to the right and left side frames, and a **center bar** connected to **inner end portions** of the right and left support brackets through the deformation absorbing means". On a reasonable interpretation of the subject-matter of claim 1, the end beam comprises three parts (right support bracket - center bar - left support bracket), which are arranged in a side-by-side configuration, extend in a lateral direction and are connected through the deformation absorbing means.

The appellant argues that V3 discloses right and left support brackets formed by respective flange plates, each carrying in its centre a bolt. Following this argument, feature M2.5 would be known, as the bolt represents a center shaft member of the rubber bush which is connected to the respective support bracket. However, the board cannot see that the lateral arrangement as required by features M2.1 to M2.2.2 would also be disclosed by V3. In particular, the board finds that V3 lacks a clear and unambiguous disclosure of a center bar connected to inner end portions of the right and left support brackets through the deformation absorbing means, as required by feature M2.2.1.

The terms "outer" and "inner" used in claim 1 are considered to refer to orientations as viewed in the lateral direction of the railroad car (see also feature M1.2), i.e. orientations extending in the longitudinal direction of the end beam ("outer" ends of the right and left support brackets, feature M.2.1, being farther, in the longitudinal direction of the end beam, from the center bar than the "inner" end portion of the support brackets, feature M.2.2.1). The appellant's view that the center bar in V3 related only to the portion of the end bar between the rubber bushes could not be followed. The term "bar" specifies a constructional part, which can only be represented by

the transverse bar shown in D3.2 including the end portions comprising bearings to take the rubber bushes. Hence, the flange plates in V3 allegedly corresponding to support brackets are not positioned laterally outwardly of the center bar, so the center bar of V3 is not connected to the inner end portions of the right and left support brackets. Moreover, the bolt shown in V3, which forms part of the deformation absorbing means, is clearly positioned between two screws and connected to the centre (not inner end!) of the flange plate (i.e. the support bracket according to the appellant). The inner end portion of a flange plate in V3 might be connected to the side frame, as argued by the appellant, but it is not connected - through the bolt as part of the deformation absorbing means - to the center bar, as required by feature M2.2.1.

Therefore, although the feature missing in V3 that an instrument is supported by the end beam might not be sufficient to establish inventiveness, the specific arrangement of parts as required in particular by features M2.2 and M2.2.1, seen in the lateral direction of the railroad car as argued above, is neither known nor obvious in view of the knowledge of the skilled person and in view of V2. The board cannot see how the bolt shown in V3 could be connected to the flange plate at a position further inwards so that feature M2.2.1 would be realised. Moreover, the board follows the respondent's argument that the skilled person might consider replacing the complete end beam of V3 including the flange plate by the end beam of V2 including its support brackets. However, there is no motivation to modify the deformation absorbing means of V2, so features M2.3 to M2.4 would not be realised. The combination of V3 with V2 cannot therefore prejudice the inventiveness of current claim 1. The

appellant has not provided further arguments in this respect.

2. It follows from the above that, even if it were acknowledged that the alleged prior use V3 belongs to the state of the art, the subject-matter of claim 1 involves an inventive step within the meaning of Article 56 EPC.
3. Accordingly, there is no need to address the issue of the public availability of prior use V3. In particular, the board can leave open the question of remittal to the department of the first instance in order to hear the witnesses offered by the appellant in this respect.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



A. Vottner

G. Pricolo

Decision electronically authenticated