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**Datasheet for the decision  
of 30 May 2011**

**Case Number:** T 2357/08 - 3.2.06

**Application Number:** 02023005.8

**Publication Number:** 1302434

**IPC:** B66C 9/04

**Language of the proceedings:** EN

**Title of invention:**

Steering gear of loading and unloading vehicle

**Patentee:**

MITSUBISHI HEAVY INDUSTRIES, LTD.

**Opponent:**

Gottwald Port Technology GmbH

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 123(2)

**Relevant legal provisions (EPC 1973):**

EPC Art. 56, 114(2)

**Keyword:**

"Alleged public prior use - not proven"

"Sole request - Article 123(2) requirement met, Article 56 EPC 1973 requirement met"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 2357/08 - 3.2.06

**D E C I S I O N**  
of the Technical Board of Appeal 3.2.06  
of 30 May 2011

**Appellant:** Gottwald Port Technology GmbH  
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**Representative:** Moser & Götze  
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**Respondent:** MITSUBISHI HEAVY INDUSTRIES, LTD.  
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**Representative:** HOFFMANN EITLE  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 30 October 2008  
rejecting the opposition filed against European  
patent No. 1302434 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** P. Alting van Geusau  
**Members:** M. Harrison  
W. Sekretaruk

## Summary of Facts and Submissions

I. The appellant (opponent) filed an appeal against the opposition division's decision rejecting the opposition against European patent No. 1 302 434, and requested revocation of the patent, citing *inter alia* the following documents in support of its case:

D1: US-A-5 143 400

D2: DE-C2-100 11 594

D4: US-A-5 379 220

D6: alleged public prior use of an "HMK 320" crane, supported by the following documents:

D6-1: Letter of 2 May 1991 from Hessenatie-Gylsen to Mannesmann-Demag-Gottwald GmbH;

D6-2: Letter of 22 October 1991 (in Dutch) from AIB, with single page attachment (in German) concerning a quote from 1 February 1989;

D6-3: Parts list and engineering drawings "Lenkung HMK 320" and "Lagerung für Potentiometer";

D6-4: Parts list printout from 29 July 2008, pages 1 to 6, concerning "25.08.98 HMK 320 EG"

D6-5: System drawing, "Hydraulik Unterwagen HMK 320 - 3.1488 0010-0";

D6-6: Service manual for HMK 320 EG, sections 5.4.6 and 5.4.7;

D6-7: Letter of 15 August 2008 from Mobil Elektronik GmbH; invoice 37223 of 11 September 1990; letter of 30 August 1990 concerning prior sending of documentation; memo of 22 June 1990 concerning LPC 016 121; operating instructions of 24 April 1990, pages 1 to 21, concerning "Lenk Positionier Computer Typ: LPC 016 121";

D6-8: System drawings entitled "Elektrisches Fahrwerk Steuerung", "Elektrisches Fahrwerk Eingänge SPS" and "Elektrisches Fahrwerk Ausgänge SPS"; drawings 6.0188.0005 - 3. Bl.51, from 12 December 1991; 1 page from catalogue number 6.2755 and 2 pages from catalogue number 6.0188.

D7: EP-A2-1 217 220

D8: DE-U-201 16 564

- II. With its response of 7 July 2009, the respondent requested *inter alia* dismissal of the appeal and that documents D6 to D8 not be admitted into proceedings.
- III. The Board issued a summons to oral proceedings for 11 April 2011, which upon request of the parties due to on-going negotiations between them, was rearranged for 30 May 2011. The parties were informed that they should expect a communication giving the Board's provisional opinion to be issued in the last week of April 2011.
- IV. A communication dated 29 April 2011 was sent by the Board, giving its provisional opinion. This stated *inter alia* in regard to the documents making up D6, that the Board was not convinced that a public prior use of a specific crane with the various features of claim 1 had been proven, nor exactly "what" was the subject matter of any particular crane. In this regard it was noted that various information was either illegible/vague or not clearly related to a crane or crane equipment of the same type(s), that substantiation for certain allegations was lacking, and that doubt also arose as to whether a joint venture had existed in regard to the HMK 320 crane, in particular since no bill of sale for the crane had been provided.

Material which was seemingly in the public domain appeared to be inconclusive as regard to specific technical characteristics defined in the claim, such that the opposition division's use of its discretion in not admitting the late-filed documents D6-1 to D6-7 into proceedings, appeared to be correct. D6-8, which had only been filed with the grounds of appeal, had not been conclusively shown to be part of the same alleged public prior use as D6-1 to D6-7, nor was it self-explanatory. Since D7 and D8 were both published after the priority date of the patent in suit, these also appeared to lack relevance. It was further added that inventive step of the subject matter of claim 1 when starting from D4 was a matter for discussion.

V. With its submission of 20 May 2011, the appellant filed a translation of pages 1 and 2 of D6-2 into English and also a further document,

D9: GB 1 200 973.

VI. In its letter of 26 May 2011, the respondent requested *inter alia* that D9 not be admitted into proceedings.

VII. During the oral proceedings of 30 May 2011, the appellant requested that the decision under appeal be set aside and that the European patent be revoked.

The respondent replaced all its previous requests by the sole request that the European patent be maintained in an amended form based on the auxiliary request filed during the oral proceedings on 30 May 2011 with the following documents:

claims 1 - 4 of 30 May 2011,  
description columns 1- 9 of 30 May 2011,  
and drawings Figures 1 - 5 as granted.

VIII. Claim 1 of the sole request reads as follows, whereby underlining and struck-out portions (added by the Board) indicate where an amendment has been either introduced or where a deletion has been made respectively compared to claim 1 as granted:

"1. A loading and unloading vehicle being provided with a plurality of axles (10) under a body frame (1) of said vehicle via supporting arms (5, 6), the axles (10) constituting steering means for supporting, driving, and steering wheels (7) of the vehicle, a travelling and turning control being performed by said steering means, and a steering gear comprising a hydraulic drive device, which is provided for each of right and left wheels (7) to steer the wheels (7) independently for each axle (10) and for the wheels of each axle, a controller (20), which is provided for operating said hydraulic drive device independently, wherein the steering of the wheels (7) supported by each axle (10) is done according to a predetermined travel pattern, and wherein said hydraulic drive device is composed of a hydraulic cylinder (11), ~~one~~ each of right and left hydraulic cylinders (11) attached to an axle (10) being provided with a displacement detector (8) to detect the stroke of the hydraulic cylinder (11), a steering pattern setting means (13) to set a desired steering pattern which is provided, and said controller (20) controls said hydraulic cylinders (11) of each axle (10) to be operated based on said set value of the steering pattern inputted from said steering pattern setting

means (13) and the detected value of the strokes of said hydraulic cylinders (11) inputted from said displacement detectors (8) so that the wheels (7) for each axle (10) are steered in correspondence with said travel pattern."

IX. The arguments of the appellant may be summarised as follows:

The amendments made to the granted claim were not part of the content of the application as filed, contrary to Article 123(2) EPC. Paragraph [0039] in the published version of the filed application disclosed a displacement detector on only one of the cylinders per axle, while other paragraphs (e.g. paragraph [0061]) only disclosed movement of the wheels for each axle with respect to other axles.

D6 represented a public prior use which should be considered for novelty and inventive step. Since the prior use was some 20 years previous, only a few people still had knowledge thereof. The crane type HMK 320 is mentioned on all documents, whereby the suffixes MK31 and M031 were customer denotations and the suffix EG meant "electric with gripper". The number 128 072 tied the series of document together as one prior use. Several searches had been made for relevant information to the patent, including one made after receipt of the communication from the opposition division before the oral proceedings, resulting in the filing of D6-1 to D6-7 in advance of those proceedings. D6-8 was found with some difficulty and could only be filed with the appeal grounds. In regard to D6-1, no bill of sale or the like could be located. It was clear from D6-2 that

an HMK 320 crane had stood on the quay in Antwerp and been commissioned; such was evidently accessible to harbour workers even if not in a public area, but no further details in that regard could be supplied. No better copy of D6-3 was available, so text had been added to clarify certain lines. The drawings of D6-3 showed on the one hand a multi-axle vehicle with two steerable wheels per axle, each having a hydraulic cylinder whereby the wheels of each axle were connected by a coupling bar, and on the other hand a potentiometer mount for measuring displacement. The parts list in D6-4 was produced after a change from a paper system to a computerised system and related to a steering drawing for the HMK 320 EG, which had the first drawing number in D6-3. D6-5 concerned the Antwerp crane HMK 320: this showed each wheel had a steering cylinder and the steering cylinders of each axle were commonly controlled via one valve on each axle even if the function of the control block could not be deduced; the clarifying text blocks had been added by the appellant. No better copy of D6-6 was available and a reference to the HMK 320 crane with an order number 128 072 was admittedly not present. D6-7 unfortunately did not provide a chain of a requested, delivered and installed steering program terminal, and no further documents were available to show this. D6-8 was an electrical connection drawing containing the order number 128 072, although the Board was correct that the drawings were not self-explanatory.

D7 and D8 contained references to further patents which were prior published, even though these documents were not more relevant than D4.



Whilst the subject-matter of amended claim 1 was novel, it lacked an inventive step when starting from D4. The embodiment of Fig. 3 of D4 disclosed all the features of claim 1 apart from a separate cylinder for each wheel and a separate displacement detector for each cylinder. Instead, a single cylinder was used for both wheels together with a rod for each wheel. Starting from D4, the problem to be solved was to provide an alternative wheel steering control compared to the mechanical linkage of the double-ended rod arrangement. It was a well known alternative to use two cylinders, such as described in paragraph [0030] of the patent, or in D1, D2 or D9. As regards Fig. 6 of D1, each cylinder controlled the angle of one wheel; D2 showed how hydraulic cylinders could be applied in several different axle arrangements; D9 disclosed each wheel controlled separately using steering angle measurement. Alternatively, when starting from D9, the problem to be solved was the provision of an alternative form of steering drive, and column 5, lines 8 to 12 of D4 already noted that other steering mechanisms could be used. Also, in D9 the form of motor for driving the worm steering control could be electric or hydraulic as nothing was stated about the setting motor type.

As regards the filing of D9 just before oral proceedings, this was filed within the time frame given for response by the Board, and was found in a further search concerning steering. It was highly relevant and should thus be admitted into the proceedings.

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

The requirement of Article 123(2) EPC was met. Basis in the disclosure could be found in e.g. paragraphs [0042] and [0051] to [0061] of the published application.

D6-1 to D6-7 failed to establish a public prior use. In particular, there was no evidence that any crane of HMK 320 type, let alone the steering system of same, was publicly accessible before the priority date. D6-8 could not be reconciled unambiguously with any of D6-1 to D6-7. Even where various cylinders could be seen in D6-5, it was not even clear what function these cylinders had in the steering nor how the steering system operated. Since only incomplete and illegible documentation had been provided, the presence of link rods or other connecting mechanisms between the wheels or axles could certainly not be excluded and connecting rods at least between the pairs of wheels on each axle were anyway shown e.g. in D6-3, which the invention of claim 1 sought to avoid. The D6 evidence was largely incoherent, and not seemingly as relevant anyway as documents already on file. Due to its late filing it should not be admitted into proceedings, as had already been decided by the opposition division, at least in regard to D6-1 to D6-7, and D6-8 was filed even later.

D7 and D8 lacked relevance and were anyway published too late. These should not be admitted into proceedings.

D9 lacked sufficient relevance for it to be introduced into proceedings. No mention was made of hydraulic cylinders and even the setting motor rotated a worm

wheel, rather than a hydraulic cylinder which used linear displacement measured by stroke detectors. It was not disclosed that the steered wheels were driven. D9 and D4 would not be combined since these anyway represented incompatible systems. D4 stated that other types of steering system could be used, but this related to the system in D4 not to a different steering arrangement such as in D9. Due to its extremely late filing and lack of sufficient relevance, it should also not be admitted into proceedings.

Starting from D4, it was not obvious to combine the teaching of D1 or D2 therewith to arrive at the claimed invention. D1 only disclosed hydraulic toe angle correction and thus could not be used as an alternative to the steering system used in D4. D2 disclosed merely steering of an entire axle using one or more cylinders and thus did also not relate to the type of system of D4. Moreover, D4 taught a skilled person that left and right wheels on an axle should be jointly steered by using a common connection rod.

## **Reasons for the Decision**

### 1. *Article 123(2) EPC*

- 1.1 The amendments made to claim 1 define first the steering of the wheels "independently for each axle" in a more limited manner by adding the expression "and for the wheels of each axle", such that not only the wheels (i.e. both wheels) of one axle must be steerable independently of wheels on another axle, but also the

left and right wheels on a single axle must be steerable independently from each other.

This is disclosed for example in paragraph [0054] which states that "a hydraulic cylinder 11 is provided for each of right and left wheels supported by each axle 10 so that each cylinder can be steered independently, and each hydraulic cylinder is operated independently per each axle by the controller 20 by means of said electromagnetic valves 12."

1.2 Additionally, Figure 3 discloses a single cylinder 11 operating via an electromagnetic valve 12 and having a single stroke displacement detector. The description of Figures 2 and 3 starting in paragraph [0035] explains that the hydraulic cylinder 11 (which is shown for both left and right wheels with the same reference numeral 11 in all Figures) "is connected to the steering linkage part ... of each wheel". It is thus disclosed that the embodiment shown in Figure 3 applies to each cylinder 11. Moreover, without a separate displacement detector for each wheel, each wheel could not be steered independently of another wheel on the same axle as required by e.g. paragraph [0054], since no feedback signal would be available for indicating how far the rod in each hydraulic cylinder had been displaced (see e.g. the feedback control explained for each cylinder in paragraphs [0047] and [0048]).

1.3 Further, paragraph [0056] notes that "the wheels 7 of each axle 10 can be steered to accurately coincide with the target steering pattern, for the strokes of the hydraulic cylinders 11 are detected by cylinder stroke detectors 8 and input to the controller", which - due

to the need for accurate coincidence - corresponds to each individual wheel having to be steered independently of the other one on the same axle so as to adopt the correct steering angle for that wheel. Thus, from this, it can only be understood that each hydraulic cylinder must have its own displacement detector, as now also defined by the amendments made to the granted claim.

1.4 Although paragraph [0039] of the application as filed states that a stroke detector "is attached to one of the hydraulic cylinders 11 provided on each axle to detect the stroke S (displacement) of the rod 101", this refers to Figure 3 which anyway shows only a single cylinder 11 of the two cylinders on each axle and is thus at variance with the remaining disclosure which implies measurement of the cylinder displacement on each one of the cylinders on a single axle. The disclosure in paragraph [0039] is however not limiting in any sense for the whole application.

1.5 Hence the features introduced into claim 1 of the respondent's sole request do not result in subject matter extending beyond the content of the application as originally filed. The amendments made to claim 1 thus meet the requirement of Article 123(2) EPC.

It may also be noted that the word "one" in the expression "is attached to one of the hydraulic cylinders 11 ..." (see paragraph 1.4 above) was replaced by the word "each" in the amended description of the sole request, so as to be fully consistent with claim 1.

2. *Non-admittance of D6-1 to D6-8, D7 and D8 into proceedings.*

2.1 In regard to D6-1, as the Board had stated in its provisional opinion sent prior to oral proceedings, no bill of sale had been provided to show that the crane "HMK 320 (MK 31)" was not supplied as part of a joint venture between Hessenatie-Gylsen and Mannesmann-Demag-Gottwald. With its submission of 20 May 2011, the appellant stated that it was unable to provide a bill of sale. The Board thus had no reason to alter its provisional opinion.

2.2 Regarding D6-2, this seemingly confirms that a mobile crane with production number "128072 MD 31" underwent statutory inspection by a test authority. This nevertheless fails to resolve the issue mentioned in the Board's provisional opinion whereby a test authority did not appear to be part of the public. Although the appellant argued in its submission of 20 May 2011 that the location of the crane on a quay in the Antwerp harbour meant it would be open to inspection by harbour workers and also to servicing or operating personnel if not also to groups of visitors, there is no corroborating evidence that this crane was indeed open to any such persons, nor - even if it had been - that the features of the steering system in claim 1, if these were indeed part of this crane, were accessible to those persons. As also stated by the appellant, no invoice nor further details could be provided.

The Board thus had no reason to alter its provisional opinion in that regard.

2.3 D6-3 is partly illegible. As stated by the Board in its provisional opinion, D6-3 did not appear to establish any public prior use. The appellant stated in its letter of 20 May 2011 that it showed a parts list, and whilst the Board recognises that there is clearly a listing of parts of some type, the details of many of the parts and also of the headers and footers cannot be discerned. Also, the drawings included in D6-3 might be part of the same document, but this is unknown; the drawing numbers do appear to correspond however to the "parts list" in as far as this can be read, but the drawings themselves only show specific views and thus do not show the totality of the crane. When the drawings were made and when any revisions were made to them remains unknown, nor is it clear how any such drawings were made available to the public, if at all. In as far as the drawing "Lenkung HMK 320" can be read, there are linkage bars at least between the wheels on the right and left hand sides of each axle.

The Board thus had no reason to alter its provisional opinion in this regard.

2.4 Although the Board had mentioned in its provisional opinion that D6-4 did not establish any public prior use and that no corroborating evidence had been supplied to show that D6-4 dated 29 July 2008 related to a date on a computer printout due to a change from paper documentation, no further evidence in this regard was supplied by the appellant. Instead, the appellant argued that the date of 25 August 1998 and the location Antwerp provided a clear link to D6-2. However, as stated above, D6-2 itself is no evidence of public

prior use and the date in 1998 provides no further assistance in that regard.

The Board thus had no reason to alter its provisional opinion.

- 2.5 In its provisional opinion the Board had stated that the key in D6-5 (which would normally show a date and possible revision dates) was illegible and that the function of the block SP 12/1-F was not evident. The appellant confirmed this in its letter of 20 May 2011. The appellant's reliance on the drawing number being the same as that in part of D6-4 does not alter the foregoing facts, in particular since the exact origin of D6-4 has not been corroborated by any evidence.

The Board's provisional opinion on this matter thus remained unaltered.

- 2.6 In regard to D6-6, the Board had already stated that the photographs were vague and that no evidence of public availability had been provided. The appellant also confirmed that no better copy was available and that no reference to a crane with an order number 128 072 was present.

The Board thus had no reason to alter its provisional opinion.

- 2.7 With regard to D6-7, the Board had mentioned in its provisional opinion that no evidence had been supplied which indicated what was included in any final steering program terminal supplied, nor was it clear what information was being relied upon in the statement of



the declarant. Also, whilst the Board could recognise a public prior use of certain supplied equipment due to an invoice for same, the modified numbering of the equipment was unclear as regards its functionality and structure when compared to units with similar but not identical numbering in the supplied manual from 1990, which itself anyway contained no details of the steering means for the left or right wheels on any single axis. The appellant offered, in its response of 20 May 2011, only that the document D6-7 should be regarded as an internal document.

Again therefore, the Board had no reason to alter its provisional opinion.

2.8 In its provisional opinion, the Board had further stated that D6-8 did not appear to establish any public prior use, was not linked clearly to other documents of D6 and was not self-explanatory. This was not contested by the appellant, such that the Board had no reason to alter its provisional opinion.

2.9 In regards to the various documents making up D6 it is also noted that the various denotations EG, MK 31, MO31 following HMK 320 give rise to further doubt as to whether the information given in the drawings and documents all relate to the same crane. Although the appellant argued that EG meant merely "electric with gripper" ("elektrisch mit Greifer") and that the suffixes MK31 and MO31 were customer denotations, no evidence corroborating these allegations was filed.

2.10 Summarising, none of the individual parts of D6 or the parts of D6 together provided sufficient evidence of a

public prior use of a crane of the HMK 320 type, nor were the details shown in these documents, in any case, sufficient to establish exactly "what" was the subject of any particular alleged prior use. D6-1 to D6-8 were all filed after the nine-month period under Article 99(1) EPC and thus, at least on the basis of lack of sufficient relevance of all of these, none of documents D6-1 to D6-8 was admitted into proceedings by the Board (Article 114(2) EPC 1973).

2.11 D7 and D8 were both published after the priority date of the patent in suit and are thus not prior art under Article 54(2) EPC 1973 (i.e. the context in which they were filed). As stated by the appellant in its letter of 20 May 2011, D7 and D8 are also not more relevant than D4. Since D7 and D8 lack sufficient relevance and were both filed after the nine-month period in Article 99(1) EPC, the Board decided not to admit these documents into proceedings (Article 114(2) EPC 1973).

### 3. *Inventive step*

3.1 The appellant and respondent both agreed that D4 could be regarded as the closest prior art for the consideration of inventive step of the subject matter of claim 1. The Board finds no reason to disagree.

3.2 D4 (see e.g. Figures 3 and 4 and the description in column 2, lines 10 to 22; column 3, lines 36 to 49; column 4, line 53 to column 5, line 12; column 5, line 60 to 51 and column 7, line 48 to column 8, line 5) discloses all the features of claim 1, apart from the following:

(a) a steering gear is provided to steer the wheels independently for the wheels of each axle,

(b) each of right and left hydraulic cylinders attached to an axle being provided with a displacement detector,

(c) said controller controls said hydraulic cylinders based on the detected value of the strokes of said hydraulic cylinders inputted from said displacement detectors.

In this regard it should however be stated that D4 does disclose hydraulic cylinders, but only one hydraulic cylinder for each axle, which cylinder has a double-ended rod extending through the cylinder and wherein respective ends of the rod are attached to an Ackerman steering linkage of left and right wheels on that axle (see e.g. column 4, line 54 to column 5, line 5). D4 also discloses only one stroke detector for the single cylinder on each axle (see e.g. column 7, lines 55 to 60).

- 3.3 The respondent argued that the following feature was also not known from D4: "a loading and unloading vehicle being provided with a plurality of axles under a body frame of said vehicle via supporting arms, the axles constituting steering means for supporting, driving and steering wheels of the vehicle". However, in D4 the types of vehicle for which the invention is intended are stated e.g. in column 2, lines 10 to 12, whereby for instance construction vehicles and in particular wheel type loaders are mentioned, which vehicles by their nature have these features. Steering

of the four wheels is also mentioned specifically (see e.g. column 3, lines 38 to 42).

- 3.4 The relevant background art in D4 is stated in the description of same inserted at the end of paragraph [0002] of the amended description forming the sole request.
- 3.5 Starting from D4, the objective problem to be solved by such differences, as argued by both the appellant and the respondent, was the provision of an alternative wheel steering control (compared to the single cylinder with double-ended rod of D4). The Board also finds no reason to disagree that this problem is objective when starting from D4.

Such alternative wheel control (as claimed) has the advantage of allowing the wheels of each axle and the axles between one another to be steered accurately along the target steering pattern in various travelling modes (see e.g. column 8, line 50 to column 9, line 10).

- 3.6 The appellant argued that the use of such an alternative steering control, which it alleged required essentially only an individual control for each wheel, was disclosed by paragraph [0030] of the patent, D1, D2 or D9, and would therefore be incorporated into the vehicle of D4 without requiring any inventive skill.

However, the Board finds the appellant's arguments unconvincing as explained below.

- 3.6.1 First, the steering control in paragraph [0030] of the patent, which is acknowledged in the patent as being

publicly known, does not disclose features (a) to (c) mentioned above, but merely states that the hydraulic steering type axle which supports, drives and steers the wheels, has hydraulic cylinders for left and right wheels. How such wheels are steered (e.g. whether these are independent of each other in some way, and on what basis any feedback control might be effected) is unknown. Thus, only with the benefit of hindsight could a skilled person arrive at the subject matter of claim 1 when starting from D4 and combining it with the information in paragraph [0030].

3.6.2 In D1, a toe-angle correction system is disclosed, whereby in Figure 6 referred to by the appellant, left and right hydraulic cylinders 69 are attached to the tie rods of left and right wheels respectively. However, the toe-angle control is not a steering means of the type in claim 1 which performs a travelling and turning control and steering according to a predetermined pattern, but merely a correction means of such steering (see e.g. column 7, lines 28 to 33 and lines 45 to 48); the steering means in Figure 6 which performs travelling and turning control and steering according to a predetermined pattern is the steering assembly denoted with reference 67 (see e.g. column 7, lines 28 to 33).

Therefore, when starting from D4 and combining this with the use of two hydraulic cylinders from D1, the skilled person is merely taught that a toe-angle correction device in the form of two hydraulic cylinders may be added to each rod end of the single cylinder in D4, not however to use two hydraulic

cylinders in place of the single cylinder in D4 and steer each independently.

3.6.3 As regards D2, whilst this discloses several different arrangements for steering wheels using steering cylinders, these all relate to arrangements in which an entire axle with wheels on both sides thereof are turned together. An individual control of the wheel steering for the wheels of each axle is not disclosed (see feature (a) mentioned above). A skilled person attempting to solve the problem of providing an alternative steering means to that in D4 is therefore not taught by D1 to arrive at the subject matter of claim 1, since D1 teaches a different use of hydraulic cylinders to that in the claim. Nothing in D4 or D2 would therefore motivate a skilled person to replace the single cylinder of D4 acting on two wheels by two cylinders each acting on one wheel and each being steered independently of the other on the same axle when considering the disclosure and teaching of D2.

3.6.4 When considering the appellant's further argument concerning starting from D4 and combining this with the teaching of D9, or starting from D9 and combining this with the teaching of D4, it first needs to be decided whether D9 should be admitted into proceedings as this was filed only very late in proceedings (i.e. 10 days before the oral proceedings before the Board).

Considering first the relevance of D9, the embodiment shown in Figure 1 is the most relevant as that in Figure 2 relates to track width change. The Figure 1 embodiment relates to a vehicle where each wheel is mounted on an axle of a wheel fork and each wheel fork

is steered (see e.g. page 1, lines 77 to 84). The steering control of each wheel is a setting motor 22a of undisclosed type causing rotation of a worm 20a driving a worm wheel 18a. Thus, whatever type of motor setting motor 22a is (this not being stated), it is required to produce rotary motion. Although the appellant argued it might be a hydraulic motor, this is not disclosed, but it is clearly not a hydraulic cylinder. D9 thus discloses neither a hydraulic cylinder nor a control system for same, nor does it disclose any stroke displacement detectors. Instead, an entirely different system is used. Therefore, whilst D9 does disclose independent control of the wheels on individual axles placed at each vehicle corner, replacement of the single cylinder in D4 by a system as in D9 would not allow a skilled person to arrive at the subject matter of claim 1 unless inventive activity were involved. Further, in D4 the steering system of Figure 3 is an Ackerman steering, whereby link rods are attached between the ends of the double-ended cylinder rod and the wheels thereby linking the wheels in a further way for a specific purpose, which is not a feature of D9 and which would obviously be lost. Whilst the appellant has argued that a skilled person would find a causal link to D9 by considering D4, column 5, lines 8 to 12, this section however only refers to the invention of D4 also being possibly used with other steering control mechanisms such as electromechanical devices or rack and pinion steering systems. This does not give any teaching to the skilled person to first select certain elements from a different system of D9 and incorporate these in some way into D4, yet at the same time maintain the hydraulic system of D4 but adapt it by the use of two hydraulic cylinders instead of one,

which is what would - at least - be required when attempting to arrive at the subject matter of claim 1. The same lack of teaching also applies when considering a possible approach starting from D9 and combining this with D4, since each of the wheels would need to be operated by a single hydraulic cylinder on each side of the axle, whereas D4 only teaches a common cylinder operating both wheels of an axle via a common mechanical linkage.

Therefore, even when only considering the relevance of D9 and ignoring its extremely late filing which may have been a further factor to be taken into account, the Board decided not to admit D9 into proceedings (Article 114(2) EPC 1973) as lacking sufficient relevance, based on the conclusion that its introduction would clearly not have altered the decision on inventive step in regard to the subject matter of claim 1.

- 3.7 Summarising, based on the arguments and evidence put forward by the parties, the subject matter of claim 1 involves an inventive step.

The requirement of Article 56 EPC 1973 is therefore met.

4. Amendments were made to the description for consistency with the claims of the sole request. Neither the Board nor the appellant had any objections to the amendments made.

The Board thus concluded that the European patent could be maintained in an amended form according to the respondent's sole request.



## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
  
2. The case is remitted to the opposition division with the order to maintain the European patent with the following documents:

claims 1 - 4 of 30 May 2011,  
description columns 1 - 9 of 30 May 2011,  
drawings Figures 1 - 5, as granted.

The Registrar:

The Chairman:

M. Patin

P. Alting van Geusau