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Datasheet for the decision of 8 July 2015

Case Number: T 0910/12 - 3.2.04

Application Number: 05819023.2

Publication Number: 1828045

IPC: A47L11/282

Language of the proceedings: EN

Title of invention:
MATERIALS HANDLING VEHICLE COMPRISING AN ELECTRONICALLY CONTROLLED VALVE

Patent Proprietor:
CROWN EQUIPMENT CORPORATION

Opponent:
BT Products AB

Headword:

Relevant legal provisions:
EPC Art. 52(1), 54, 56

Keyword:
Novelty - (yes)
Inventive step - (yes)

Decisions cited:
T 0856/92, G 0009/92, G 0004/93

Catchword:

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Case Number: T 0910/12 - 3.2.04

D E C I S I O N
of Technical Board of Appeal 3.2.04
of 8 July 2015

Appellant: (Patent Proprietor)	CROWN EQUIPMENT CORPORATION 40 South Washington Street New Bremen, OH 45869 (US)
Representative:	Moore, Michael Richard Keltie LLP No.1 London Bridge London SE1 9BA (GB)
Respondent: (Opponent)	BT Products AB 59581 Mjölby (SE)
Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 7 February 2012 concerning maintenance of the European Patent No. 1828045 in amended form.**

Composition of the Board:

Chairman A. de Vries
Members: J. Wright
C. Schmidt

Summary of Facts and Submissions

I. The appellant (proprietor) lodged an appeal, received 16 April 2012, against the interlocutory decision of the opposition division of 7 February 2012 on the amended form in which European patent no. EP-B-1828045 can be maintained. The appeal fee was paid at the same time. The statement setting out the grounds was received on 15 June 2012.

II. The opposition was filed against the patent as a whole and based on Article 100(a) together with Articles 52(1) and 54(1) EPC for lack of novelty and Article 56 EPC for lack of inventive step, and on Article 100(b) with Article 83 EPC, insufficiency of disclosure.

The opposition division held that the opposition ground of insufficiency of disclosure, Article 100(b) EPC with Article 83 EPC, did not prejudice maintenance of the patent as granted. However the division did find that the opposition ground of novelty, Article 100(a) EPC, raised against claim 1 prejudiced maintenance of the patent as granted. It then held that the patent as amended according to an auxiliary request, with an amended claim 1 but unchanged independent claims 18 and 24 (renumbered as 17 and 23), did meet the requirements of the European Patent Convention, having regard to the following documents:

D1 prior use, documenting an alleged sale and lease of a Vector C15 truck and comprising:

D1a Invoice dated 20 January 2004
D1b Invoice dated 23 January 2004
D1c Receipt of payment dated 13 April 2004
D1d Purchase order dated 9 July 2003

D1e Affidavit of Christer Johansson dated 31 August 2011
D1f Leasing agreement dated 29 August 2011
D1g Translation of D1f,

D2, Service Manual, Vector C15, selected pages

D5, Service Manual, BT VR, selected pages
D6, EP1193211
D7, GB 2360757.

III. Summons to oral proceedings were issued on 27 March 2015. With a letter of 16 April 2015 the respondent (opponent) informed the Board that they would not attend the oral proceedings scheduled for 8 July 2015. Oral proceeding before the Board were duly held on 8 July 2015 without the respondent in accordance with Rule 115(2) EPC.

IV. The appellant requested that the decision under appeal be set aside and that the patent be maintained as granted (main request), alternatively that the patent be upheld in the amended form as held allowable by the decision under appeal. The respondent (opponent) requested that the appeal be dismissed.

V. Claim 1 of the patent as granted reads as follows:

"A materials handling vehicle (10) comprising: a base (20, 40);
a carriage assembly (30, 60) movable relative to said base;
at least one cylinder (50, 70) coupled to said base to effect movement of said carriage assembly relative to said base; and a hydraulic system (80) to supply a pressurized fluid to said cylinder, said hydraulic

system including an electronically controlled valve (300,600) coupled to said cylinder; characterised by a control structure (400,401,701) to control the operation of said valve (600) such that said valve is closed in the event of an unintended descent of a carriage assembly in excess of a commanded speed."

VI. The appellant argued as follows:

Novelty

D2 is not prior art, nor is the prior use of the C 15 truck proven.

D2 does not explicitly disclose the characterising features of claim 1 as granted, nor are these features implicit from the remaining features. In particular D2 does not directly and unambiguously disclose that unintended descents of the carriage are detected by comparison of actual speed to the commanded speed, it would also be possible to detect them by comparison of actual speed to a maximum safe speed. This could generate the alarm 4:100 described as "speed too high".

Furthermore in the event of an unintended descent D2 does not explicitly or implicitly disclose that the electronic valves Y21 or Y29 are operated. Other ways of stopping the carriage descending are possible, such as by applying a brake.

Neither the making public of D5 nor the prior use of a BT-VR truck described in D5 are proven. Furthermore, the alarm code 114 is described as being triggered by a fork descent that is too fast, but this does not imply that it is triggered when the descent speed exceeds the

commanded speed. For example "too fast" could mean that descent speed exceeds a maximum safe speed.

D6 does not disclose comparing descent speed with commanded speed, rather it discloses comparing it with a speed limit. Therefore the characterising feature of the claim is not known from D6.

Inventive step

D7 discloses a materials handling vehicle with a carriage. The carriage is lifted by a lifting cylinder controlled by electronically controlled valves. Nothing in D7 suggests when these valves might be operated to close. Since the skilled person knows about mechanical velocity fuses he might add one to the lifting cylinder but this does not prove he would instead operate the electronically controlled valves in case of an unintended carriage descent. Even if he did think of doing so he would rather mimic the role of the velocity fuse by closing the valve when a maximum safe speed was exceeded rather than when the commanded speed was exceeded.

VII. The respondent argued as follows:

Novelty

D2 is prior art in its own right and the truck C 15 was prior used, as is proven by D1.

D5 is prior art in the same way that D2 is prior art.

The A publication version of D6 discloses a truck with an electronic lowering valve 16 that is closed in the event of an unintended descent of a carriage above a

lowering limit speed as defined in claim 6. The lowering limit speed must be higher than, therefore in excess of, a commanded speed so the characterising feature of the claim is known from D6.

Inventive step

As acknowledged in the disputed patent, mechanical velocity fuses to stop an unintended descent of a carriage in excess of for example 120 feet/minute belong to the skilled person's background knowledge. Such a descent will be more than the commanded speed. Starting from D7 and seeking to modify it in order to prevent an unintended descent exceeding a commanded speed and applying this background knowledge, the skilled person would control the electronic valves 50 and 52 to close, and therefore they would close in the event of an unintended descent in excess of commanded speed as claimed in the characterising features of claim 1.

Reasons for the Decision

1. The appeal is admissible.

2. Background of the invention

The patent relates to materials handling device, such as a fork lift truck, see specification, paragraph [0002]. Typically such a device has a carriage assembly, e.g. for moving forks vertically. The assembly is raised by pumping hydraulic fluid into a cylinder and lowered by releasing the fluid. Conventionally, a mechanical safety valve at the base of the cylinder, called a velocity fuse, shuts off flow

out of the cylinder when the lowering speed exceeds a fixed limit.

A disadvantage with this arrangement is that a driver might sometimes want to exceed the lowering speed-limit to improve their productivity, and indeed could safely do so, but the velocity fuse prevents this, see specification column 1, lines 34 to 40.

To overcome this, the invention of claim 1 provides an electronically controlled valve to carry out the function of the velocity fuse. A control structure closes the valve in the event of an unintended descent of a carriage assembly in excess of a commanded speed, see also specification, paragraph [0009]. This allows the driver to execute intended descents, even at high speed, whilst unintended descents at speeds exceeding a command speed are prevented, paragraph [0010].

3. Main request, claim 1 as granted

3.1 Novelty with respect to alleged prior use of a combitruck C15, D1 and D2

3.1.1 The decision found that a handling device known as Victor C15 combitruck was made available to the public by prior use before the priority date of the patent, and that this prior use implied document D2 to be prior art in its own right, decision point 3. Furthermore, the decision found that both the prior use of the C15 truck and D2 itself rendered the subject matter of claim 1 as granted not new, see decision point 5.

3.1.2 The appellant has argued that, even if they had been made available to the public, neither alleged

disclosure would take away the novelty of the subject matter of granted claim 1.

3.1.3 D1 relates to the commercial background of the alleged prior use, but does not disclose technical information. Thus the only evidence that could shed light on the technical features of the C15 truck is D2. Without prejudice to the questions as to whether or not the information contained in D2 was rendered public prior to the priority date of the patent, the Board will first consider whether the public availability of the information contained in D2 would take away the novelty of the invention as claimed in claim 1.

3.1.4 D2 comprises extracts of a service manual for the Vector C15 truck. It is common ground that D2 shows the features of the preamble of claim 1.

That D2 concerns a materials handling vehicle with a base and a carriage assembly (e.g. the forks or driver cabin) movable relative to the base can be seen from the figure on the cover page of D2. The hydraulic system for lifting and lowering the cabin is shown on page 14-8, figure 14.2.5. A cylinder, e.g. the left-hand cylinder moves the cabin (figure title) relative to the base. The figure further shows a hydraulic system to supply the cylinder with fluid, pressurised by a pump P1. The hydraulic system comprises an electronically controlled valve, Y21 coupled to the left cylinder. The latter features are duplicated for a right-hand cylinder with associated electronic valve Y29.

3.1.5 For D2 to take away the novelty of the subject matter of claim 1, it would also have to disclose the safety arrangement defined in the characterising part of claim

1, that is a control structure to control the operation of the valve such that the valve is closed in the event of an unintended descent of a carriage assembly in excess of a commanded speed.

The Board interprets the feature to mean that the valve closing event is triggered by the actual speed exceeding the commanded speed. Such a descent, being contrary to what has been commanded, is an unintended descent. Thus the triggering event is not a descent above a fixed maximum speed, as is the case for a velocity fuse valve, but one exceeding the commanded speed, which may vary. Nothing in the specification suggests a different interpretation. On the contrary, the description (specification column 8, lines 18 to 32) confirms that the triggering event "unintended descent in excess of a commanded speed" means the [actual] descent speed is greater than commanded speed, with or without a certain tolerance.

3.1.6 D2 contains no explicit description of such a safety arrangement, nor has this been argued. The Board therefore needs to consider whether it is implicitly shown in D2.

The jurisprudence relevant to implicit disclosure of features is reviewed in the Case Law of the Boards of Appeal, 7th edition, 2013 (CLBA), I.C.3.3, and the decisions cited therein. As with explicit disclosures, the standard applied is the direct and unambiguous disclosure of a feature. In this context "implicit disclosure" means disclosure which any person skilled in the art would objectively consider as necessarily implied in the explicit content.

3.1.7 Normal cabin lowering is described on page 13-122, "Cabin lowering". The operator can select one of two lowering speeds. The motor M3 associated with the pump P1 then operates in a regenerative mode. Motor speed is monitored by a sensor U12 and communicated to the main computer unit, MCU. The MCU maintains a selected lowering speed irrespective of the load. However the claimed feature does not relate to normal lowering but to abnormal situations, namely in the case of an unintended descent of the carriage.

How abnormal lowering operation is monitored for malfunction is described on page 13-123 under the heading "Safety monitoring". As in the normal operating mode, pulse transducer U12 monitors M3's motor speed (point 5). The pump motor speed is monitored in relation to expected lowering speed (point 7). If a fault occurs the truck generates an error code and cabin lowering is blocked.

No explanation is given as to what is meant by the *expected* lowering speed. It could indeed mean the lowering speed *commanded* by the operator, as claimed. However the Board holds that another plausible interpretation is that, in the context of fault monitoring, it means the maximum lowering speed deemed safe. In other words expected lowering speed in the sense of what speed is expected to be safe. Thus the safety monitoring described in point 7 could involve monitoring lowering speed in relation to a maximum safe speed that is not necessarily the speed commanded by the operator.

Turning now to the error codes referred to on page 13-123, these are listed on page 13-221. Only one, alarm 4:100, mentions the lowering speed, namely in its

description; "the lowering speed is too high". No explanation is given as to what speeds are *too high*. Although it could mean the actual speed is higher than the commanded speed, bearing in mind that this relates to safety monitoring, the Board holds that it could also mean that measured speed is higher than a maximum safe speed.

From the above the Board concludes that there is no direct and unambiguous disclosure that the truck described in D2 monitors for the event of an unintended descent of a carriage assembly in excess of *commanded* speed as required by claim 1. As explained above it could, for example, monitor for the event of an unintended descent of a carriage assembly in excess of a maximum speed expected to be safe.

3.1.8 Furthermore, the Board holds that there is also no direct and unambiguous disclosure in D2 of the valve Y21 or Y29 being closed in the event of an unintended descent of the carriage.

As mentioned above, in the cabin lowering system safety monitoring section (page 13-123), D2 states that, in the event of a fault, cabin lowering is blocked. Likewise, for the alarm 4:100, "lowering speed is too high", cabin lowering is said to be blocked (see note on page 13-221). Those parts of the Vector C15 service manual filed as D2 are however silent as to *how* blocking is achieved.

The decision considered that blocking implied controlling operation of the electronically controlled valves Y21 and Y29 to close, that is to move into the non-return valve position as shown in figure 14.2.5, page 14-8. The decision argued that this first option

could be expected with a high probability and that the alternative option of stopping lowering by blocking the pump motor would not be legal.

Leaving aside the question of legality of the latter option, and keeping in mind the *direct* and *unambiguous* standard for assessing implicit disclosure, the Board holds that the former option is not the only possible way of stopping cabin lowering. As the appellant has argued, cabin lowering could for example also be achieved by applying a mechanical brake, independent of the hydraulic system.

In summary, the Board holds that D2 does not unequivocable disclose controlling the operation of the electronically controlled valve Y21 (or Y29) to close in the event of an unintended descent of a carriage assembly, let alone disclosure of doing so in the event of (or even monitoring for) an unintended descent of a carriage assembly *in excess of commanded speed*.

3.1.9 From the above, the Board concludes that there is no direct and unambiguous disclosure in D2 of the characterising feature of claim 1. Therefore the subject matter of claim 1 differs from D2 in respect of this feature and neither D2 itself nor the alleged prior use of the Vector C15 truck described therein would take away the novelty of the invention defined in claim 1. The questions as to whether or not the information contained in D2 was rendered public prior to the priority date of the patent, either by use of the Vector C15 truck or by making D2 itself public, are therefore moot.

3.2 The only reason given in the decision for not allowing maintenance of the patent as granted was lack of

novelty of the subject matter of claim 1 with respect to the alleged prior use/prior disclosures based on D1 and D2. However, the notice of opposition also challenged novelty of claim 1 vis-à-vis documents D5 and D6 respectively and lack of inventive step vis-à-vis D7. The respondent has maintained this position in appeal.

In accordance with Article 111(1) EPC, second sentence, the Board of Appeal may either exercise any power within the competence of the department which was responsible for the decision appealed or remit the case to that department for further prosecution. In the interest of overall procedural efficiency, the Board proposed dealing with the remaining novelty and inventive step issues (see communication of 11 May 2015, point 4). As neither objected to this course of action, the Board decided not to remit the case to the first instance but to deal with them itself during the oral proceedings.

3.3 Novelty vis-à-vis D5

D5 is an excerpt from a service manual for a truck "BT VR". In appeal the respondent has alleged that D5 is prior art in the same way as D2, but without supporting arguments as to why this might be so (letter of 5 June 2015, point 4.1.1).

3.3.1 As acknowledged in the notice of opposition, page 9, the BT VR truck is different from the Vector C 15 truck mentioned in D1 and D2. Therefore whether or not the Vector C 15 truck or its service manual is prior art can have no influence on whether or not D5 is prior art. Furthermore, no evidence has been presented in opposition or appeal which might support the fact that

either D5 itself or a BT-VR truck was ever made public. Therefore the Board holds that it is not proven that D5 constitutes prior art.

3.3.2 Notwithstanding the above, the Board furthermore considers that, even if D5 had been proven to be prior art, it would not have taken away the novelty of the subject matter of claim 1. In particular the Board is not convinced that D5 directly and unambiguously discloses monitoring for an unintended descent of a carriage assembly in excess of a commanded speed, as required by the characterising portion of claim 1. Error modes are discussed on page 21-154. Error code 114 has the description "Too fast regenerative lowering of the forks". Analogous to the Boards assessment of error code 4:100 in D2 (see point 3.1.7), the Board considers that the description of the error code 114 in D5 could mean that the lowering speed of the forks is too fast with respect to a maximum safe speed. This would imply a control structure assessing descent speed with respect to a maximum speed rather than commanded speed as claimed. Thus the characterising feature of claim 1 is not directly and unambiguously disclosed by D5, and the novelty of claim 1 cannot be denied by D5.

3.4 Novelty vis-à-vis document D6

3.4.1 D6 (A2 publication with publication date before priority) relates to a materials handling vehicle, see abstract. It includes a hydraulic circuit as shown in figure 1 with lifting cylinders 7 lifting a carriage assembly (German "Lastaufnahmemittel") and electronically controlled valves 8, 10 and 16. Referring to claim 6, the respondent has argued that D6 renders the subject matter of claim 1 not novel because it discloses, inter alia, that in the event of an

unintended descent of the carriage assembly in excess of a commanded speed, the valve 16 is operated to close. The Board disagrees.

3.4.2 According to claim 6 the valve 16 is moved into a closed position 16a, (German "Sperrstellung 16a"), when the lowering speed reaches a lowering *limit speed* (German Senkgrenzgeschwindigkeit"). Claim 6 depends on claim 5, which defines that once the *limit speed* is reached the valve 10 opens to allow the motor 3 to operate as a generator. How this happens is explained in paragraph [0032]. In particular, if a lowering speed commanded by the user (German "an der Sollwertvorgabeeinrichtung vorgegebene Senkengeschwindigkeit") exceeds the limit speed, the valve 10 moves into the through-flow position, allowing fluid flowing from the cylinder 7 to drive the pump 2/ motor 3 as an electricity generator. Consistent with claim 6, at high speeds the valve 16 can also be closed, paragraph [0034]. Thus, for commanded speeds in excess of the limit speed, as shown in figure 1, all the fluid leaving the cylinders 7 passes through the pump 2, and regenerative battery charging takes place.

None of the lowering conditions described here relate to *unintended* carriage descent as the claimed event condition for closing the valve requires. Rather they relate to *intended* descents at speeds above the limit speed at which regenerative battery charging can start. For this reason alone D6 does not disclose the characterising feature of claim 1.

Furthermore, bearing in mind the Board's interpretation of the characterising feature of claim 1 (see point 3.1.5 above), a fixed limit speed at which battery charging can start is not the same as commanded speed,

which can vary. Consequently D6 does not directly and unambiguously disclose that the valve 16 is closed as a result of a measured speed exceeding the *commanded* speed, let alone doing so in the event of *unintended* lowering as defined in claim 1 of the patent in suit.

In conclusion, the Board holds D6 does not disclose the characterising features of claim 1. Therefore the subject matter of claim 1 is new with respect to D6.

3.5 Inventive step

In appeal the respondent has argued that the subject matter of claim 1 lacks inventive step vis-à-vis D7, particularly the second embodiment thereof, and the skilled person's general knowledge.

3.5.1 It is common ground that D7 (abstract, figure 2, page 7 middle and page 8) discloses a materials handling device. Figure 2 shows the hydraulic circuit, including a carriage assembly lifting cylinder 20, an on-off valve 50 and a proportional valve 52, also having an off position. Both valves are electronically controlled to control the flow of hydraulic fluid to and from the cylinder 20.

3.5.2 The respondent has also argued that velocity fuse valves, that is mechanical valves which close automatically when a flow rate through the valve exceeds a maximum rate corresponding to a maximum allowable lowering speed, belong to the skilled person's general knowledge (cf. patent specification, column 1 lines 24-34).

However, neither D7 nor this general knowledge include the control structure feature of controlling the

operation of an electronically controlled valve such that it closes in the event of an unintended descent in excess of a commanded speed.

3.5.3 D7 is silent as to any control structure for dealing with an unintended descent of the carriage assembly.

The valves 50 and 52 are described on page 7, last full paragraph and the following paragraph, bridging pages 7 and 8. The only control structure described here is a feedback control regulating proportional valve 52 so that a detected speed is made equal to a commanded speed. Nothing suggests what happens when measured speed exceeds commanded speed or what happens when a descent is unintended. Furthermore, D7 is silent as to conditions under which the valves 50 and 52 close.

3.5.4 At best the combination of D7 with the skilled person's general knowledge (whether or not that combination would be obvious) would result in the addition of velocity fuses to the lifting cylinder 20 of D7. These velocity fuses would shut mechanically in the event of any descent in excess of a maximum speed, even if the lowering was intended and without consideration of the commanded speed. In other words since neither D7 nor the above mentioned skilled person's general knowledge provide the claimed control structure feature, the combination would not result in the characterising feature of claim 1. Straightforward combination of D1 and D7 thus does not lead to the subject-matter of claim 1.

3.5.5 Nor is it apparent to the Board why it might be obvious for the skilled person to further adapt the above combination by removing the only means they know of stopping an unsafe descent, namely the mechanical

velocity fuse, and instead providing a new electronic control structure as claimed.

The Board therefore considers the subject matter of claim 1 to involve an inventive step vis-à-vis D7 and common general knowledge.

3.6 In summary, without prejudice to the questions as to whether or not the subject matter described in D2 and D5 is proven prior art, the Board holds that the subject matter of claim 1 as granted is new and involves an inventive step and thus meets the requirements of Article 52(1) with 54(1) and with Article 56 EPC respectively.

4. Further independent claims 18 and 24 of the main request

Independent claims 18 and 24 have the same wording as claims 17 and 23 respectively in the version of the patent held allowable by the opposition division. In the interlocutory decision the opposition division held that their subject-matter was inventive, so that therefore this sole opposition ground raised against these claims did not prejudice their maintenance unamended. Due to the principle of prohibition of reformatio in peius, see G 9/92 (OJ 1994, 875) and G 4/93 (OJ 1993, 478) the Board sees itself barred from reviewing that part of the decision that in effect upholds some of independent claims as granted and against which the appeal by the proprietor as sole appellant is not directed, see also CLBA IV.E.3.1, case e) and T 856/92, point 2 of the reasons, cited therein.

5. The respondent-opponent has not challenged the decision's positive finding regarding the opposition ground of insufficiency, nor does the Board see any compelling reason to do so. It concludes that none of the opposition grounds raised against the patent prejudice its maintenance as granted, Article 101(2) EPC, second sentence.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The patent is maintained as granted.

The Registrar: The Chairman:

D. Magliano A. de Vries

Decision electronically authenticated