BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

Internal distribution code:
(A) [ ] Publication in OJ
(B) [ ] To Chairmen and Members
(C) [ ] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 6 November 2013

Case Number: T 1253/10 - 3.2.01

Application Number: 04104980.0

Publication Number: 1526051

IPC: B60T 7/12, B60T 8/24, B60T 13/66

Language of the proceedings: EN

Title of invention:
Method, arrangement and computer program for controlling a hill hold brake

Patent Proprietor:
Scania CV AB (PUBL)

Opponent:
Knorr-Bremse Systeme für Nutzfahrzeuge GmbH

Headword:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

Europäisches Patentamt | European Patent Office | Office européen des brevets

Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 1253/10 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 6 November 2013

Appellant: (Patent Proprietor)	Scania CV AB (PUBL) S-151 87 Södertälje (SE)
Representative:	Katérle, Axel Wuesthoff & Wuesthoff Patent- und Rechtsanwälte Schweigerstraße 2 D-81541 München (DE)
Respondent: (Opponent)	Knorr-Bremse Systeme für Nutzfahrzeuge GmbH Moosacher Str. 80 D-80809 München (DE)
Representative:	Moore, Joanne Camilla Schweiger & Partner Karlstraße 35 D-80333 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted 27 April 2010 revoking European patent No. 1526051 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman: G. Pricolo
Members: C. Narcisi
D. T. Keeling

Summary of Facts and Submissions

I. European patent No. 1 526 051 was revoked by decision of the Opposition Division posted on 27 April 2010. An appeal was filed by the Patentee against this decision on 31 May 2010 and the appeal fee was paid at the same time. The statement of grounds of appeal was filed on 25 August 2010.

II. Oral proceedings took place on 6 November 2013. The Appellant (Patentee) requested that the decision be set aside and that the patent be maintained as granted. The Respondent (Opponent) requested that the appeal be dismissed.

Granted claim 1 reads as follows:

"A method of controlling a hill hold brake in a vehicle, comprising the steps that:
- sensing vehicle speed, rpm of output axle of vehicle gear box, vehicle braking pressure, and vehicle accelerator pedal position,
activating the hill hold brake in response to that the speed is equal to a predetermined speed, that the rpm is equal to a predetermined rpm, that the braking pressure is equal to a predetermined braking pressure, and that the accelerator pedal is inactive,
characterized by activating the hill hold brake after a predetermined delay".

III. The Appellant's arguments may be summarized as follows:

The subject-matter of claim 1 is inventive over prior art documents D1 (US-A-6 039 673) and D3

(DE-A1-199 50 034). To begin with, the reasons given in the impugned decision are not well-founded in that D1 does not represent the closest prior art, such that the skilled person trying to achieve the object of the invention would not start from D1. This is due to the fact that the hill hold function is merely a secondary aspect in D1, which is not even mentioned in the statement of the problem to be solved or of the object to be achieved (see D1, column 1, lines 55-64). Even assuming that D1 were taken as a starting point by the skilled person, the claimed subject-matter would nevertheless not be derivable in an obvious manner. Undisputedly, the method of claim 1 differs from that disclosed in D1 by at least two features, i.e. by the step comprising (i) "sensing rpm of output axle of vehicle gear box" and "activating the hill hold brake in response that the rpm is equal to a predetermined rpm", as well as by the step comprising (ii) "sensing the braking pressure" and "activating the hill hold brake in response that the braking pressure is equal to a predetermined braking pressure". Hence, by the fulfilment of the criteria mentioned in claim 1 a condition of stopped or nearly stopped state is detected in a reliable way, as compared to D1 where only a stopped state is detected, and braking of the vehicle "is smooth and not so abrupt" (see patent specification (hereinafter designated as EP-B), paragraph [0008]). Achieving this effect is indeed the object of the invention. This effect is also enhanced by the predetermined time delay determining the start of hill hold brake actuation (see claim 1) being measured as from the instant when said conditions are fulfilled and not after start of the "neutral control" (see D1, column 2, lines 13-20). By the combination of

features according to claim 1 the likelihood of erroneously detecting a stopped state is considerably reduced, e.g. in a case where the vehicle speed is derived from a wheel sensor, the wheels are blocked by the actuation of the brakes and slippage between the wheels and the ground occurs. In this specific case, measurement of the rpm of the output axle of the gear box avoids an erroneous detection of a stopped or nearly stopped state. The combination of the claimed features is likewise not obvious in view of D1 and D3. Indeed, the skilled person would not derive from D3 any suggestion about feature (i), which is not even mentioned in D3. The skilled person would also not have any incentive to adopt said feature (i), for there is no suggestion in the prior art that by introducing a further criterion based on the measurement of the rpm of the output axle of the gearbox the object of the invention would be attained. As to feature (ii), this is likewise not suggested in D3 and represents an improvement over the detection of a brake pedal depression signal through a sensor as disclosed in D3. In conclusion, the combination of D1 and D3, even if considered as obvious, would not lead to the subject-matter of claim 1 and the skilled person would find no incentive and no suggestion in the prior art to adopt said feature (i).

IV. The Respondent's arguments may be summarized as follows:

The subject-matter of claim 1 does not involve an inventive step with regard to D1 and D3. Prior art document D1 constitutes the appropriate starting point for the assessment of inventive step, given that the actuation of the hill hold brake forms an essential and

central aspect of D1 (see D1, column 1, line 65- column 2, line 11). Additionally, a comfort factor similar to that underlying the object of the invention, i.e. the avoidance of abrupt brake actuation and vehicle stop, also forms a relevant aspect of the object of D1 ("prevention of transmission of engine vibration to the driver's seat", D1, column 1, lines 62-64). Further, claim 1 does not even specify the event or point in time with respect to which said "predetermined delay" is defined, nor does it imply any difference with regard to D1 as to the kind of stopped or nearly stopped state which it seeks to define. In particular, according to D1 "the detection limit is reached when the actual vehicle speed falls to a set value (2 km/h)" (D1, column 7, lines 55-57), which set value evidently amounts to a condition of stopped or nearly stopped state. Thus the only differences to D1 reside in features (i) and (ii). Concerning feature (ii) it appears that this merely amounts to a technical measure equivalent to that disclosed in D1, since in both cases a predetermined or set value of a specific physical entity (either the pressure or the amount of pedal depression) is employed to determine the extent to which the brake pedal was actuated. As to feature (i) it appears that it likewise cannot contribute to inventive step since D3 already teaches to consider further criteria to determine the vehicle's stopped state, such as for instance the signals representing the engine's rpm and the engagement of the gear transmission. Thus, the provision of feature (i) merely amounts to an implementation of redundancy as a plausibility check. The skilled person, starting from D1 and in view of D3, would thus further improve the detection of the stopped or nearly stopped state such

as to reduce the likelihood of an erroneous detection. In doing so the skilled person would obviously consider the rpm of the output axle of the gear box since this gives a direct and immediate indication about the state of the vehicle's motion. For these reasons the subject-matter of claim 1 lacks an inventive step.

Reasons for the Decision

1. The appeal is admissible.

2. The objections raised by the Appellant based on D1 not representing the closest prior art are no sufficient reason for the impugned decision to be considered erroneous. In effect, for the assessment of inventive step any prior art document which provides a suitable or plausible starting point for the skilled person may be taken into account. D1 represents such a suitable starting point in the present case, given that it discloses "a control system for an automatic transmission including ... a brake which is engaged to prevent the vehicle moving backward and to thereby establish a hill-hold state in the speed change unit" (D1, column 1, line 65-column 2, line 4). Thus, it would be evident for the skilled person that the functions provided by the control system and method of D1 bear a very close relation to the object of the present invention, i.e. "to control a hill-hold brake in such a manner that unintentional movements of the vehicle on a slope are avoided and that the braking of the vehicle in connection with a temporary stop is smooth and not so abrupt" (EP-B, paragraph [0008]). Hence, the skilled person would recognize that D1

actually discloses a method or a control system for controlling a hill hold brake, in the same way as does contested claim 1. Additionally, as it follows from claim 1 and from the parties' submissions (see points III, IV above; see also reasons hereinafter, point 3), it is undisputed that the control system of D1 comprises a substantial part of the claimed features and thus only a small number of modifications are required in order to arrive at the claimed subject-matter. For these reasons D1 indeed represents a suitable and plausible starting point for the assessment of inventive step, regardless of whether it represents "the" closest prior art in absolute terms.

3. The above mentioned features (i) and (ii) (see points III and IV above) constitute the only differences between claim 1 and prior art D1. Indeed, as already noticed by the Respondent, the method of D1 also detects a stopped or nearly stopped state of the vehicle, for according to D1 "a detection limit is reached when the actual vehicle speed falls to a set value (2 km/h)" (D1, column 7, lines 55-57). Also, according to D1 a predetermined time delay T1 (D1, column 7, lines 58-62) is measured as from the "satisfaction of the condition (D1, column 7, lines 43-44) for starting the neutral control" and these conditions are fulfilled when a stopped or nearly stopped state is detected (see D1, column 7, lines 45-57). Therefore, contrary to the Appellant's view, in this respect no differences emerge as compared to the corresponding features of claim 1 (see "activating the hill hold brake after a predetermined delay") and to the corresponding vehicle's state (stopped or nearly stopped state) as purportedly defined by the fulfilment

of the corresponding criteria of claim 1. Thus, except for said features (i) and (ii), the remaining features of claim 1 are known from D1.

4. The aforementioned features (i) and (ii) in combination with the remaining known features of claim 1 do not involve an inventive step over D1 and D3, taking into account the common general knowledge and the usual capabilities of the skilled person. In effect, the skilled person, starting from D1, would look for further improvements of the detection of a vehicle's stopped or nearly stopped state, in order to avoid an erroneous detection of such a state and to perform a smooth and not so abrupt actuation of the hill hold brake during a temporary stop (see also EP-B, [0008])). The skilled person would learn from D3, which likewise relates to a control method for a hill hold brake (see D3, column 2, lines 5-31), that a plurality of additional and at least partly redundant physical quantities, such as speed (detected by a rotation sensing device ("Drehzahlfühler")), rpm of the motor and a signal representing engagement of the gear transmission (see D3, column 44, lines 10-49) are sensed and corresponding criteria are implemented in order to perform automatic actuation of the hill hold brake. It would thus be obvious for the skilled person that, similarly to the detection of gear engagement and motor rpm, the detection of the rpm of the output axle of the gear box provides an alternative additional criterion for detecting the stopped or nearly stopped state. Indeed, the vehicle is all but certainly not in a stopped or nearly stopped state if either the rpm of the motor are above a preset limit and the gear is engaged or analogously if the rpm of the output axle of

the gear box are above a corresponding preset limit. The skilled person would thus set in an obvious manner a predetermined limit for the rpm of the output axle of the gear box and would provide sensing means for the rpm of this axle. It is undisputed that such sensing means are well known in the art. Hence, determining whether the sensed value of said rpm is below this preset limit establishes a further criterion, in addition to those mentioned in D1 (D1, column 7, lines 43-57), which makes it possible to further reduce the probability of an erroneous detection of a stopped or nearly stopped state. Feature (i) would thus be obvious for the skilled person in view of D1 and D3. Finally it is also noted that the advantage allegedly implied by feature (i), relating to the improved detection of the stopped or nearly stopped state when the wheels are blocked and are slipping on the ground, is not mentioned in the patent specification and has not been proved by the Appellant. In the Board's view this alleged advantage is unrealistic. In fact, if the wheels are blocked, then the output axle is also blocked, and thus its rpm (=0) cannot help in establishing whether the vehicle is effectively stopped or whether it is still moving due to slippage of the wheels.

As to feature (ii) it is noted that, as stated by the Respondent, this is merely a way of getting an equivalent measure of the braking force resulting from brake pedal actuation. A similar and entirely equivalent way of evaluating the braking force is disclosed in D1 describing a signal indicating brake pedal depression (D1, column 5, lines 56-58; column 7, lines 51-53). Thus, the skilled person would, as a

matter of convenience (for instance if a signal representing brake pressure is already produced by the vehicle's ABS system) or if need be, implement measure (ii) without performing an inventive step.

In conclusion, in view of the reasons set out hereinbefore it ensues that the subject-matter of claim 1 lacks an inventive step (Article 56 EPC).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Vottner G. Pricolo