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Datasheet for the decision of 6 December 2013

Case Number: T 1982/10 - 3.2.01

Application Number: 03077662.9

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Title of invention:
Anti—rollover brake system

Patent Proprietor:
Dynamotive IP, LLC

Opponent:
LUCAS AUTOMOTIVE GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 76(1)

Keyword:
"Extended subject-matter (yes)"

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-

Catchword:
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Case Number: T 1982/10 - 3.2.01

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

Appellant: (Patent Proprietor)	Dynamotive IP, LLC 4218 N Surf Road Hollywood, FL 33019 (US)
Representative:	Wegner, Hans Bardehle Pagenberg Partnerschaft mbB Patentanwälte, Rechtsanwälte Prinzregentenplatz 7 D-81675 München (DE)
Respondent: (Opponent 02)	LUCAS AUTOMOTIVE GmbH Carl-Spaeter—Str. 8 D-56070 Koblenz (DE)
Representative:	Röthinger, Rainer Wuesthoff & Wuesthoff Patent— und Rechtsanwälte Schweigerstrasse 2 D-81541 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 4 June 2010 revoking European patent No. 1375230 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I. European patent No. 1 375 230 was revoked by the decision of the Opposition Division posted on 4 June 2010. An appeal was lodged against this decision on 12 August 2010 and the appeal fee was paid at the same time. The statement of the grounds of appeal was filed on 7 October 2010.

II. Oral proceedings were held on 6 December 2013. The Appellant (Patentee) requested that the decision be set aside and that the patent be maintained in amended form on the basis of the claims according to the main request or one of the auxiliary requests I to III, filed with letter of 7 October 2010, or auxiliary requests IV and V, filed with letter of 9 January 2012. The Respondent (Opponent) requested that the appeal be dismissed.

Claim 1 of the main request reads as follows:

"An anti-rollover brake system (40) for a vehicle having front wheels (42,44), the system comprising:

a. a set of front brakes (50, 52) for applying pressure to resist the rotation of the front wheels (42, 44);

b. a sensor (58) for establishing at least one of a lateral acceleration or a body roll angle of the vehicle, for producing a rollover signal in response to a force urging the vehicle to rollover;

c. a control (60) for actuating said front set of brakes (50, 52) in a predetermined program in response to said rollover signal, when said rollover signal reaches a predetermined limit indicative of impending rollover, the control being adapted to actuate one of said front brakes independently of the other of said front brakes to avoid rollover;

d. wherein the control (60) is programmed to brake the outer front wheel to reduce the amount of a front lateral force that the outer front wheel can produce, so that a rear lateral force created by an outer rear wheel is greater than the front lateral force created by the outer front wheel."

Claim 1 of auxiliary request I differs from claim 1 of the main request in that the wording "of said front brakes to avoid rollover;" (in feature c.) is replaced by the wording "of said front brakes to avoid rollover, wherein the control (60) is programmed to actuate the appropriate brakes at a lateral acceleration on the vehicle's centre of mass corresponding to the predetermined limit; and".

Claim 1 of auxiliary request II differs from claim 1 of the main request in that the wording "for establishing at least one of a lateral acceleration or a body roll angle" (in feature b.) has been replaced by the wording "for establishing one of a lateral acceleration or a body roll angle".

Claim 1 of auxiliary request III differs from claim 1 of the main request in that feature b. has been replaced by feature b. of claim 1 of the second

auxiliary request and feature c. has been replaced by feature c. of claim 1 of the first auxiliary request. Claim 1 of the fourth auxiliary request differs from claim 1 of the main request in that in feature b. the wording "a sensor (58) for establishing at least one of a lateral acceleration or a body roll angle of the vehicle" is replaced by the wording "a sensor (58) for establishing a lateral acceleration of the vehicle" and the wording "urging the vehicle to rollover; and" is replaced by the wording "urging the vehicle to rollover, wherein said force is proportional to the lateral acceleration of the vehicle; and". Further, the wording of feature d. was entirely replaced, as compared to claim 1 of the main request, by the wording "wherein said control (60) actuates the outer front brake (50, 52) to apply an amount of pressure proportional to said lateral acceleration.".

Claim 1 of the fifth auxiliary request differs from claim 1 of the fourth auxiliary request in that the wording of feature c. is replaced by the wording of feature c. of the first auxiliary request.

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

The groups of features b. and c. of claim 1 of the main request do not contravene Article 76(1) EPC. In relation to the features (i) "a sensor... for producing a rollover signal in response to a force urging the vehicle to rollover" and (ii) "a control (60) for actuating said front set of brakes (50, 52) in a predetermined program in response to said rollover signal, when said rollover signal reaches a predetermined limit indicative of impending rollover"

it is considered that these do not extend beyond the subject-matter as disclosed in the parent application F3 (WO-A-99/01311), whose filing date the present contested patent (based on a patent application filed as a divisional application of F3) is claiming. In contrast to the assessment of the Opposition Division a rollover signal which is continuously compared to a predetermined limit is indeed directly and unambiguously disclosed in F3 (see description, starting page 7, line 13). F3 describes a vehicle that is susceptible to a friction rollover when a lateral acceleration of its centre of mass measures 0.8 g (F3, page 8, paragraph 1). Therefore the critical amount to roll the vehicle over is 0.8 g and the predetermined limit would be set equal to an amount less than this critical amount, such as for instance 0.75 g. In the context of this example F3 states (on page 8, lines 8-9): "therefore, at a lateral acceleration of 0.75 g's, the control would actuate the appropriate brakes". This passage directly and unambiguously discloses for the person skilled in the art that the control continuously or repeatedly compares the lateral acceleration to the predetermined limit (0.75 g) and actuates the brakes at this lateral acceleration, i.e. "when the predetermined limit is reached", as defined in claim 1. Consequently, the way rollover is sensed according to claim 1 is directly an unambiguously disclosed in F3.

Further feature (iii) "the control being adapted to actuate one of said front brakes independently of the other of said front brakes to avoid rollover" of group of features c. is likewise disclosed in the parent application F3. In particular F3 states literally (see page 5, lines 22-24) that "in a preferred embodiment of

the present invention, the brake control 60 is also capable of actuating each brake 50, 52, 54 and 56 independently". The Opposition Division erroneously held that this passage of the description of F3 is not related to avoiding rollover. In effect, it is emphasized that the entire invention is concerned with avoiding vehicle rollover (see page 2, line 6; page 4, line 4, page 5, line 5; page 7, line 13, etc.) and that the term "independently" appears right at the end of the paragraph describing the general concept of "an anti-rollover brake system in accordance with the present invention" (F3, page 5, line 4-24), which term is moreover used to define "a preferred embodiment of the present invention". In addition, group of features d. of claim 1 (which is originally disclosed on page 4, lines 11-21 of F3) clearly demonstrates that the control is programmed such as to independently actuate the front and rear outer brakes of the vehicle in order to avoid rollover. This establishes the missing explicit link to avoiding rollover in the cited passage on page 5 (lines 22-24) and again confirms that independent actuation of the brakes is indeed disclosed in F3 in this context.

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

The aforesaid features (i), (ii) and (iii), belonging to said groups of features b. and c. of claim 1 of the main request, infringe Article 76(1) EPC since these are not disclosed in the parent application F3 determining the filing date of the contested patent. Claim 1 of F3 defines "a sensor for producing a rollover signal in response to a predetermined force urging the vehicle to rollover" whereas in feature (i)

the term "predetermined" is omitted. In analogue manner feature (ii) now recites "a control (60) for actuating said front set of brakes (50, 52) .... when said rollover signal reaches a predetermined limit indicative of impending rollover", whereas claim 1 of F3 merely defines "a control for actuating said brakes in a predetermined program in response to said rollover signal". Thus, according to features (i) and (ii) a rollover signal is produced in response to any force urging the vehicle to rollover and not in response to a "predetermined" force, as originally disclosed in F3. Correspondingly, according to feature (ii) the control actuates said front brakes when the rollover signal "reaches a predetermined limit" and not simply "in response to said rollover signal", as disclosed in F3. Finally, feature (iii) also cannot be derived from F3 since the cited passage of F3 including literally the term "independently" does not bear any relation to anti-rollover control. Indeed, said passage (page 5, lines 22-24) has to be read in conjunction with the preceding passages relating to "conventional power assisted brake systems" and thus only describes general technical features of the control system.
In summary it ensues that groups of features b. and c. include subject-matter going beyond the content of the application as filed.

The same objections apply to claim 1 of auxiliary requests I to V.

Reasons for the Decision

1. The appeal is admissible.

2. The subject-matter of claim 1 of the main request extends beyond the content of the parent patent application F3, whose filing date is claimed by the divisional application forming the basis of the contested patent. Specifically, groups of features b. and c., including above mentioned features (i) to (iii), are not clearly and unambiguously disclosed in F3. Starting with features (i) and (ii) it is noted that these, as discussed by the Respondent, provide for a different definition of the rollover signal and of the implemented control strategy as compared to F3 (see for instance claim 1). According to these features a rollover signal is issued "in response to a force urging the vehicle to rollover", thus regardless of the intensity or the amount of the force. The rollover signal is therefore a continuous or an intermittently produced signal, which is produced regardless of whether or not a critical situation close to rollover occurs, and is solely generated by said urging force. Importantly, the implemented control strategy according to feature (ii) implies actuating the brakes when this rollover signal reaches a "predetermined limit". Hence, actuation of the brakes depends exclusively on said "predetermined limit" which is however not defined in physical terms in claim 1 and possibly may also be determined by means of additional physical parameters. F3, by contrast, defines the rollover signal as being issued "in response to a predetermined force urging the vehicle to rollover", thus implying clearly that no signal is issued if no predetermined force urging the

vehicle to rollover is reached. Then, once such a signal is produced, the control proceeds to actuation of the brakes (see F3, claim 1, last feature). Consequently, the anti-rollover brake control strategy according to features (i) and (ii) is clearly different and more general than that disclosed in F3.

The Appellant's argument relating to features (i) and (ii) being disclosed on pages 7 and 8 of F3 cannot be followed by the Board. Indeed, the example described on page 7, line 27 to page 8, line 9 of E3 is clearly in keeping with the above conclusions of the Board and with the previously discussed technical teaching of claim 1 of F3, for the example clearly illustrates that a "predetermined amount of force" is set equal to 0.75 g and that "at a lateral acceleration of 0.75 g the control 58 would actuate the appropriate brakes" (E3, page 8, lines 6 to 9).

As to feature (iii) it is noted that it is undisputed that the disclosure to be found in F3 relating to "actuating each brake 50, 52, 54 and 56 independently" (page 5, lines 22-24) is not explicitly connected to anti-rollover brake control. In the view of the Board, contrary to the Appellant's opinion, there is moreover also no implicit disclosure of feature (iii) in F3.

In effect, F3 discloses actuation of both front brakes or of one of the front brakes to prevent vehicle rollover (see for instance page 2, lines 12-15; page 4, lines 3-4; page 4, line 23-page 5, line 3; page 6, lines 16-22; claims 5 and 6). Nevertheless this does not amount to independent actuation of the front brakes (as implied by feature (iii)). Independent actuation of

the front brakes actually would imply a control for actuating the brakes according to a predetermined program capable of applying different brake pressures to the outer and inner front wheels depending on the given situation, in order to avoid vehicle rollover. Such a control and such a predetermined program is however not disclosed in F3.

F3 further discloses actuation of the brakes 50, 52, 54 and 56 with a maximum amount of pressure or with an amount of brake pressure proportional to the measured lateral acceleration of the vehicle 10 (F3, page 7, lines 3-12; claims 1, 3 and 4). This is again no disclosure of an independent actuation of the front brakes to avoid rollover.

The disclosure on page 5 of F3, starting with line 4 and especially lines 22-24, relates to an anti-rollover control strategy based on four brakes 50, 52, 54, 56 (see lines 14-18) and even in lines 22-24 the wording "actuating each brake 50, 52, 54 and 56 independently" clearly implies a brake control system or control program using four brakes. Consequently, even if it were considered that this passage is related to avoiding rollover, it does not disclose a brake control system and program for the two front brakes of the vehicle (according to the group of features c. of claim 1). What is more, there is no clear and unambiguous disclosure on page 5 that the independent actuation of said four brakes is implicitly to be read in relation with avoiding rollover. A clear and unambiguous disclosure necessarily implies that the skilled person would construe said passage in no different way. However, due to the preceding sentences (starting from

line 18) referring to conventional brake control systems (for instance traction or ABS control), said passage can also be construed as meaning that the brake control of the invention is capable of independently actuating the brakes to implement known driver's assist systems.

Finally, the Appellant's argument that feature d. of claim 1 supports the Appellant's interpretation of the aforementioned passage on page 5 of F3, is evidently unfounded, for the relevant part of the description of F3 (page 4, lines 3-21), on which feature d. is based, does not even mention braking the outer rear wheel. The fact that nonetheless the front lateral force on the outer front tire may become less than the rear lateral force on the outer rear tire is due to the braking of the outer front wheel which reduces the front lateral force to a greater extent than the rear lateral force, as convincingly argued by the Respondent.

In view of the above reasons it is concluded that the subject-matter of claim 1 of the main request contravenes Article 76 (1) EPC.

The same holds for claim 1 of each of auxiliary requests I to V since these claims also include said features (i), (ii) and (iii)).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: Chairman:

A. Vottner G. Pricolo