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D E C I S I O N
of 9 June 1994

Case Number: T 1019/92 - 3.2.1

Application Number: 86308866.2

Publication Number: 0230722

IPC: B60K 28/10, B60K 26/02

Language of the proceedings: EN

Title of invention:
Failsafe engine controller

Patentee:
General Motors Corporation

Opponent:
Robert Bosch GmbH

Headword:

Relevant legal norms:
EPC Art. 56, 112(1), 114(1) and (2)
EPC R. 55(c)

Keyword:
"Late submitted material - document admitted (yes, no abuse of procedure)"
"Enlarged Board - referral (no)"
"Inventive step (no)"
"Opposition - scope"

Decisions cited:
G 0009/91, T 0156/84, T 0534/89, T 0017/91

Catchword:

I. If an opponent requests revocation of the patent in its entirety then the fact that no specific prior art material is cited against a dependent claim does not exclude that claim from the opposition (point 2.1 of the Reasons, paragraphs 3 and 4).

II. The fact that an opponent after the end of the opposition period subsequently submits prior art material originating from himself does not constitute an abuse of the proceedings in the absence of evidence that this was done deliberately for tactical reasons (see point 2.2 of the Reasons).

Case Number: T 1019/92 - 3.2.1

D E C I S I O N
of the Technical Board of Appeal 3.2.1
of 9 June 1994

Appellant: General Motors Corporation
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Respondent: Robert Bosch GmbH
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office dated 15 October 1992
revoking European patent No. 0 230 722 pursuant to
Article 102(1) EPC.

Composition of the Board:

Chairman: F. Gumbel
Members: S. Crane
J.-C. Saisset

Summary of Facts and Submissions

- I. European patent No. 0 230 722 was granted on 14 March 1990 in the basis of European patent application No. 86 308 866.2.

Claim 1 of the granted patent reads as follows:

"An engine controller for an internal combustion engine (10) having an intake space into which air and fuel are supplied, comprising an accelerator pedal (12) biased to an engine idle position and operable to an engine off-idle position in response to a force applied thereto; and position sensing means (18) for sensing the position of the accelerator pedal; characterised by force sensing means (20,34) for sensing the force applied to the accelerator pedal; and responsive means (26,28,30,36,38) responsive to the force applied to the accelerator pedal sensed by the force sensing means for supplying an air and fuel mixture to the internal combustion engine in accordance the the accelerator pedal position sensed by the position sensing means when the force applied to the accelerator pedal is greater than zero, and in accordance with an engine idle schedule when the force applied to the accelerator pedal is zero, whereby the engine operation is maintained at idle when the force applied to the accelerator pedal is zero even through the accelerator pedal position remains in an off-idle position."

Dependent Claim 2 relates to a preferred embodiment of the engine controller according to Claim 1.

II. The patent was opposed by the Respondents on the grounds that its subject-matter lacked inventive step (Articles 100(a) and 56 EPC). In the Notice of Opposition the following documents were referred to as state of the art:

(D1) EP-A-0 106 011

(D2) EP-A-0 121 937

(D3) DE-B-2 062 965

(D4) US-A-4 393 833

(D5) US-A-4 509 478

III. After the issue of a communication by the Opposition Division dated 18 October 1991, indicating its provisional conclusion that the subject-matter of granted Claim 1 could not be derived in an obvious manner from the cited state of the art, the Respondents referred in a letter dated 16 December 1991 to a further state of the art document, viz:

(D6) Gerhard Kolberg: "Elektronische Motorleistungssteuerung für Omnibusse", Verkehr und Technik 1984, Heft 4, pages 121 to 125.

Thereafter, on 29 May 1992, the Opposition Division issued a further communication indicating the provisional conclusion that the subject-matter of granted Claim 1 lacked inventive step having regard to documents D1 and D6 and that accordingly revocation of the patent was to be expected. After the Appellants (Proprietors of the patent) had made a detailed reply to this communication in a letter dated 6 July 1992, the Opposition Division revoked the patent with its decision dated 15 October 1992, the reasons given corresponding to those contained in the communication of 29 May 1992.

- IV. An appeal against this decision was filed on 13 November 1992 and the appeal fee filed on the same day. The Statement of Grounds of Appeal was received on 18 January 1993.
- V. Oral proceedings before the Board were held on 9 June 1994.

At the oral proceedings the Appellants submitted the following requests:

- (A) Setting aside of the contested decision and maintenance of the patent in unamended form.
(Main request)
- (B) First auxiliary request: Maintenance of the patent in amended form on the basis of Claims 1 and 2 according to Appendix 3 filed with the Statement of Grounds of Appeal.
- (C) Second auxiliary request: Maintenance of the patent in amended form on the basis of the single claim according to Appendix 5 filed on 4 May 1994, as amended during oral proceedings.
- (D) The referral of the following question to the Enlarged Board of Appeal:

"When new prior art is filed outside the opposition period by an Opponent, but was known to the Opponent before the end of the opposition period, what right does the Opposition Division have to use its power under Article 114(1) in preference to its power under Article 114(2)."

- (E) Refund of the appeal fee.

The Respondents requested that the appeal be dismissed.

VI. Claim 1 according to the first auxiliary request reads as follows:

"An engine controller for an internal combustion engine (10) having an intake space into which air and fuel are supplied, comprising an accelerator pedal (12) biased to an engine idle position and operable to an engine off-idle position in response to a force applied thereto; and position sensing means (18) for sensing the position of the accelerator pedal; characterised by force sensing means (20,34) for sensing the force applied to the accelerator pedal; and responsive means (26,28,30,36,38) for supplying an air and fuel mixture to the internal combustion engine in accordance with the accelerator pedal position sensed by the position sensing means and comprising fuel supply means (26) responsive to the force applied to the accelerator pedal (12) as sensed by the force sensing means (20,34) for supplying fuel to the intake space in accordance with the accelerator pedal position sensed by the position sensing means (18) when the sensed force is greater than zero or for supplying an idle fuel quantity to the intake space when the sensed force is zero, whereby the engine operation is maintained at idle when the sensed force is zero even though the accelerator pedal position remains in an off-idle position."

The single claim according to the second auxiliary request reads as follows:

"An engine controller for an internal combustion engine (10) having an intake space into which air and fuel are supplied, comprising an accelerator pedal (12) biased to an engine idle position and operable to an engine off-idle position in response to a force applied thereto;

responsive means (28) comprising air supply means including a variable position throttle blade (24) operable to regulate the air flow into the intake space, and throttle positioning means (30,36,38) responsive to the fuel supplied to the intake space for positioning the throttle blade to a position at which the air flow into the intake space results in a desired air and fuel ratio; and position sensing means (18) for sensing the position of the accelerator pedal; characterised by force sensing means (20,34) for sensing the force applied to the accelerator pedal; and in that the responsive means (26,28,30,36,38) supplies the air and fuel mixture to the internal combustion engine in accordance with the accelerator pedal position sensed by the position sensing means and further comprises fuel supply means (26) responsive to the force applied to the accelerator pedal (12) as sensed by the force sensing means (20,34) for supplying fuel to the intake space in accordance with the accelerator pedal position sensed by the position sensing means (18) when the sensed force is greater than zero or for supplying an idle fuel quantity to the intake space when the sensed force is zero, whereby the engine operation is maintained at idle when the sensed force is zero even though the accelerator pedal position remains in an off-idle position."

VII. In support of their requests the Appellants argued substantially as follows:

The Opposition Division had erred in admitting document D6 into the proceedings. The author of this document was an employee of the Respondents so they must have been aware of it at the time of filing the opposition and its late submission, for which they had given no reason, therefore constituted an abuse of the procedure. The situation was therefore comparable to that dealt with in decision T 17/91 and T 534/89 (Headnotes published in OJ

EPO 1993/09). Furthermore, the failure of the Respondents to name this document in their Notice of Opposition meant that they had not met the requirements of Rule 55(c) EPC, so that the opposition should have been rejected as inadmissible.

The question of whether late-filed material known to an Opponent at the time of filing an opposition could subsequently be admitted into the proceedings was an important point of law requiring clarification and should therefore be referred to the Enlarged Board of Appeal.

In any case, even if document D6 were admitted into the proceedings, then a combination of its teachings with those of document D1 could not lead to the subject-matter of granted Claim 1. The latter document did not concern the problem of a stuck accelerator pedal and the pedal switch shown there did not constitute "force sensing means" as required by the claim. Furthermore, if a fault were detected then the engine was fully disabled and not returned to idle operation. According to document D6, a stuck accelerator pedal was not detected by force sensing means when the fault occurred and instead was only inferred subsequently if the brake and accelerator pedal were both detected as being depressed at the same time. The claimed invention provided a simple and effective solution which was not comparable to the complex and potentially unreliable switching arrangement shown in document D1 or to the less than fully failsafe proposal of document D6.

Claim 1 of the first auxiliary request and the single claim of the second auxiliary request contained further features derived from, or in the latter case all of the features, of granted Claim 2. This claim had not been opposed so that having regard to the decision of

Enlarged Board of Appeal G 9/91 (OJ EPO 1993, 408) the respective claims of the auxiliary requests were not open to examination of their patentability. In this context the Opposition Division had again erred in revoking the patent as a whole rather than maintaining it on the basis of granted Claim 2.

In view of the procedural violations committed by the Opposition Division refund of the appeal fee was justified.

VIII. In reply the Respondents put forward in essence the following arguments:

The Notice of Opposition clearly met the requirements of Rule 55(c) EPC and there could be no doubt that the opposition was admissible. Furthermore, the opposition was explicitly directed against the patent in its entirety. The fact that no specific document was cited against dependent Claim 2 but instead reference made to the trivial nature of its features was wholly justified in the circumstances since those features were in fact stated as being known in the patent specification itself.

The skilled man would immediately recognise that the proposal of document D1 would cope with the problem of a stuck accelerator pedal. The pedal switch disclosed there was either open or closed depending on the force exerted on the pedal and the engine controller was responsive to this switch to give normal engine operation or to shut the engine down accordingly. The pedal switch therefore constituted "force sensing means" within the meaning of granted Claim 1. It was well known in the relevant art, as witnessed by document D6, that it was preferable to return the engine to idle operation rather than shutting it down completely in the event of

a fault. The adaptation of the engine controller of document D1 in this way could not therefore be seen as involving an inventive step.

Reasons for the Decision

1. The appeal complies with the requirements of Articles 106 to 108 and Rules 1(1) and 64 EPC. It is therefore admissible.

2. *Procedural issues*

2.1 The question of whether a Notice of Opposition fulfils the requirement of Rule 55(c) EPC that it indicate the facts, evidence and arguments presented in support of the grounds on which the opposition is based is an objective one which has to be judged at the date of filing or (if the notice is amended) at the expiry of the nine month opposition period. Thus even if, as here, an Opponent subsequently relies upon prior art material not mentioned in the Notice of Opposition to support his line of argument this cannot render that Notice of Opposition inadmissible if at the relevant date it complied on an objective basis with the requirement stated above.

In the present case the Notice of Opposition contains a comprehensively argued statement to the effect that the subject-matter of granted Claim 1 lacks inventive step with respect to documents D1 and D5, so that the requirements of Rule 55(c) EPC in this respect was clearly met.

The further requirement of Rule 55(c) EPC that the Notice of Opposition state the extent to which the patent is opposed is also met in the present case by the

explicit request that the patent be revoked in its entirety. The fact that the argumentation with respect to the substantive merits of dependent Claim 2 is restricted to the somewhat cursory statement that this contains for the skilled man nothing of a surprising nature which could justify the patentability of the subject-matter of the patent cannot mean, as contended by the Appellants, that the opposition had only effectively been brought against Claim 1, since the intended meaning of the statement, i.e. that taking into account the prior art already cited against Claim 1 and the general knowledge of the skilled man then the subject-matter of Claim 2 also lacked inventive step, is abundantly clear in the circumstances.

As a consequence, the further contention of the Appellants that taking into account the findings of decision G 9/91 (supra), which considered the situation where some subject-matter had been deliberately excluded from an opposition, the Opposition Division in the present case had erred by not maintaining the contested patent on the basis of Claim 2 instead of revoking it in its entirety, is not supported by the facts. In any case, it has to be noted in this respect that at no point during the opposition proceedings did the Appellants actually request maintenance of the patent in amended form or in any way indicate that this would be acceptable to them.

- 2.2 The question of the admittance of late-filed material into opposition proceedings and the relationship between Articles 114(1) and 114(2) EPC has generated a considerable volume of jurisprudence, see the compendium "Case Law of the Boards of Appeal of the EPO 1987-1992", issued by the EPO, pages 105 ff. Following the landmark case T 156/84 (OJ EPO 1988, 372) the general principle which has been developed is that the most important

criterion to be taken into account when considering whether such late-filed material should be disregarded is its "relevance" or "evidential weight" in comparison with that already on the file. Other considerations which can also play a decisive role are the degree of lateness and whether the late filing can be seen as representing an abuse of the proceedings, see decisions T 534/89 and T 17/91 (supra).

The Appellants argue that decision T 156/84 is only referring to material which has been "found late" by the relevant party. The Board assumes that they are referring in this respect to what is said in point 3.7, second paragraph, of the Reasons, which is the only passage in which the term "found late" occurs. However, that passage is concerned with a comparison of the position of an opponent and a third party under Article 115 EPC and the use in it of the term "found late" cannot be seen as having been intended to set up a special category of late-filed material, the general principles elucidated in the Reasons only being applicable to this category. That this is the case is apparent from point 3.12 of the Reasons where it is stated that "too strict a standard should not be set when a decision is taken on whether to admit citations submitted outside the opposition period".

In the present case document D6 was first cited by the Respondents in reply to the communication of the Opposition Division dated 18 October 1991 indicating the provisional opinion that Claim 1 could not be derived in an obvious manner from the state of the art cited in the Notice of Opposition. Since the author of document D6 was an employee of the Respondents it can be reasonably assumed that a full and diligent search of the prior art available to the Respondents should have revealed document D6. It therefore qualifies as late-filed. There

can, however, be no suggestion that document D6 was consciously known to the Respondents at the time of drafting the Notice of Opposition and that for tactical reasons a deliberate decision was taken not to cite it at that time. This contrasts to the situations found to exist in decisions T 534/89 and T 17/91 where the late submission of alleged prior uses was seen as representing an abuse of the proceedings with the consequence of their being disregarded irrespective of their relevance.

The Board cannot therefore accept the proposition of the Appellants, which incidentally has only been argued in the appeal proceedings and not before the Opposition Division itself, that document D6 should not have been admitted into the proceedings by the Opposition Division and that its admittance constituted a procedural error on its part. Furthermore, once the Opposition Division had formed the view that in the light of this document its previously expressed positive opinion with respect to inventive step could no longer be sustained, the way in which it continued the procedure with the issue of a comprehensively argued communication dated 29 May 1992 before eventual revocation of the patent cannot be faulted.

- 2.3 As far as the request of the Appellants for the referral of a question to the Enlarged Board of Appeal is concerned (see section V. D above), the situation envisaged in it, i.e. that late-filed prior art was "known" to an Opponent before the end of the opposition period, has not been demonstrated as obtaining in the present case (see point 2.2 above) and therefore does not need to be decided here. Accordingly this request must be refused (Article 112(1)(a) EPC).

3. *Novelty and inventive step*

3.1 Main request

The claimed invention relates to what is generally termed in the art a "drive-by-wire" engine controller. The general principles of operation of these controllers are well known and substantially as follows: The mechanical linkage between the accelerator pedal and the engine is dispensed with. Instead, the position of the pedal is sensed electrically, for example by a potentiometer, and a control computer determines the air and fuel mixture supply to the engine on the basis of the sensed pedal position and other variables such as temperature and engine speed. When the pedal is in its normal non-depressed position the air and fuel mixture is supplied according to an idle schedule.

It is known for example from document D4 to monitor the engine controller for a throttle blade stuck in an open position by comparing the position of the throttle blade and the accelerator pedal, and to take remedial action such as engine shutdown or closure of the throttle blade if the throttle stays open for a predetermined time after the pedal returns to an idle position.

However, if the accelerator pedal were to stick in an off-idle position even though force was removed from it then the system of document D4 would not register a fault since the throttle blade and pedal positions would properly correspond and no remedial action would be taken. The technical problem which is addressed by the claimed invention is therefore to provide failsafe operation of the engine controller in the event of the accelerator pedal sticking.

In order to solve this problem the engine controller according to granted Claim 1 comprises means for sensing the force applied to the accelerator pedal. If this force is greater than zero then the air and fuel mixture is supplied to the engine in accordance with the sensed pedal position. If on the other hand the force is zero then the air and fuel mixture is supplied in accordance with the engine idle schedule even though the accelerator pedal may be in an off-idle position.

The novelty of the subject-matter of granted Claim 1 has not been at issue during either the opposition or appeal proceedings. In particular, none of the cited documents discloses pedal force sensing means to which the air and fuel mixture supply is responsive in the way explained above.

However, the concept of providing means for detecting when the accelerator pedal is in an off-idle position even though no force is applied to it and of taking appropriate remedial action is known from document D1. This document does not specially address the problem of failsafe operation in the case of a "stuck" accelerator pedal and instead gives as an example of the type of fault condition to be dealt with the situation where the return spring of the accelerator pedal is broken. The skilled man, however, has no difficulty in recognising that the underlying technical considerations are essentially equivalent in both cases, that is that the pedal is in an off-idle position although no force is applied to it, and that the system of document D1 will accordingly also provide failsafe operation in the event of the pedal being stuck.

As described in document D1 the accelerator pedal comprises two relatively pivotable parts which are urged apart by a spring with a switch being arranged between

the parts so that the switch will be closed when force is applied to the pedal. The Appellants have argued that this switch arrangement does not constitute "force sensing means" within the meaning of Claim 1. The Board can, however, not support that view. It is evident that the switch monitors the presence or absence of force on the pedal and the condition of the switch determines the behaviour of the engine controller. It is noted in this respect that although the form of force sensor (a resistive strain gauge) particularly described in the patent specification will have an output quantitatively related to the pedal force, the absolute value of that force plays no role in determining how the engine controller functions. All that is significant is whether the force is greater than or equal to zero, as is the case in document D1.

Where the proposal of document D1 does however differ from the claimed subject-matter is that in the prior art sensed zero force on the pedal with this in an off-idle position will lead to shutdown of the engine, either by switching off the ignition or interrupting the fuel supply. It is in this respect that the relevance of document D6 becomes apparent. This document relates to a "drive-by-wire" engine controller for an omnibus. In point 3.1 of this document the importance of failsafe operation is emphasised and it is stated there that generally in the event of a detected fault the engine is returned to idle operation, the only exceptions being when the fuel injection volume control member is blocked or when the position monitoring system for this member is defective. In point 5.4.1 it is then described how the condition of an accelerator pedal in a blocked off-idle position is recognised if a substantial off-idle signal and a brake signal are received simultaneously the fuel injection volume control member being adjusted accordingly. It is evident that return of the engine to

idle operation as proposed in document D6 is generally advantageous to completely disabling the engine as proposed in document D1 since this enables a certain residual manoeuvrability of the associated vehicle. Thus in view of the teachings of document D6 it has to be seen as an obvious measure for the skilled man to adapt the engine controller of document D1 in such a way that when the force sensing means detects zero force on the accelerator pedal even though this is in an off-idle position then the air and fuel mixture is supplied according to the engine idle schedule. Accordingly the subject-matter of granted Claim 1 lacks inventive step (Articles 52(1) and 56 EPC).

3.2 Auxiliary requests

Claim 1 according to the first auxiliary request includes some, and the single claim according to the second auxiliary request all, of the features of granted dependent Claim 2. That claim, in comparison with granted Claim 1, contains further details of how the engine controller functions. It specifies that it is the quantity of fuel supplied which is determined in accordance with the sensed pedal position and that the air supply means, including a variable position throttle blade and throttle positioning means, regulates the air flow in accordance with the quantity of fuel supplied. This basic set up of a "drive-by-wire" engine controller is, as stated in the introductory description of the patent specification, well known *per se*, see for example document D5. The alternative set up, also mentioned in the patent specification, is where the air flow is determined in accordance with the sensed pedal position and the quantity of fuel regulated accordingly, which is how the engine controller of document D1 functions. Clearly, the concept of using accelerator pedal force sensing means for detecting when the pedal is off-idle

even though no force is applied to it is equally applicable to both of the basic set ups mentioned above. Thus the respective claims of both auxiliary requests can also not be seen as involving an inventive step. In this respect it must be noted that the Appellants did not argue to the substantive merits of these claims but instead relied in essence on their contention that, having regard to decision G 9/91, they should be allowed without further examination. This question has been dealt with in point 2.1 above.

4. *Refund of the appeal fee*

Since the appeal has not met with success the request for refund of the appeal fee must be refused (Rule 67 EPC). In any case it is apparent from what is said in points 2.1 and 2.2 above that the procedure before the Opposition Division was not flawed in any way which could have justified the requested refund.

Order

For these reasons, it is decided that:

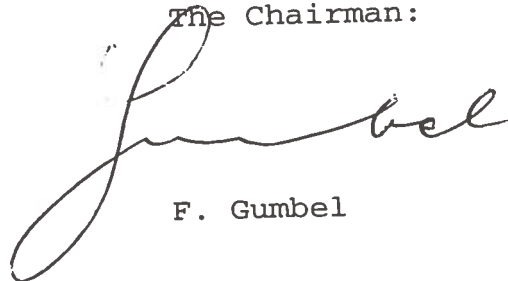
1. The appeal is dismissed.
2. The requests for refund of the appeal fee and for referral of a question to the Enlarged Board of Appeal are rejected.

The Registrar:



S. Fabiani

The Chairman:



F. Gumbel

