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**D E C I S I O N**  
**of 18 January 2000**

**Case Number:** T 0964/97 - 3.2.4

**Application Number:** 90304086.3

**Publication Number:** 0393974

**IPC:** F02D 11/10

**Language of the proceedings:** EN

**Title of invention:**

Pedal mechanism for electronic throttle

**Patentee:**

WILLIAMS CONTROLS, INC.

**Opponent:**

Robert Bosch GmbH

**Headword:**

-

**Relevant legal provisions:**

EPC Art. 123(2), 56

**Keyword:**

"Amendments - broadening of claim 1 (yes)(first auxiliary request not allowed)"

"Inventive step of main request - no"

"Inventive step of second auxiliary request (yes)"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 0964/97 - 3.2.4

**D E C I S I O N**  
**of the Technical Board of Appeal 3.2.4**  
**of 18 January 2000**

**Appellant:** WILLIAMS CONTROLS, INC.  
(Proprietor of the patent) 14100 S.W. 72nd Avenue  
Portland  
Oregon 97224 (US)

**Representative:** Jones, Ian  
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Celcon House  
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**Respondent:** Robert Bosch GmbH  
(Opponent) Postfach 30 02 20  
D-70442 Stuttgart (DE)

**Representative:** -

**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 8 July 1997  
revoking European patent No. 0 393 974 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** C. A. J. Andries  
**Members:** H. A. Berger  
C. Holtz

## Summary of Facts and Submissions

I. The appellant (proprietor of the patent) lodged an appeal, received on 15 September 1997, against the decision of the opposition division, dispatched on 8 July 1997, revoking the patent No. 0 393 974. The appeal fee was also paid on 15 September 1997. The statement setting out the grounds of appeal was received on 14 November 1997.

The opposition was filed against the patent as a whole and was based on Article 100(a) EPC.

II. The following prior art documents were cited during the opposition proceedings:

D1: US-A-4 519 360

D2: US-A-4 787 353

D3: VDO-Querschnitt Nr. 4, March 1981, Schwalbach, DE  
"Intelligente Regelung in der Motor-Peripherie",  
pages 1 bis 19

D4: FR-B-2 562 010

D5: Magazine: "Automobil-Industrie", 28. Jahrgang,  
Heft 2/Juni 1983, pages 155 bis 160; M. Pfalzgraf  
and al.: "Zentrales Fahrzeugmanagement für  
Nutzfahrzeuge (E-Gas)"

D6: JP-A-60-99729

D7: US-A-4 528 590

D8: DE-A-3 215 167

D9: Gas pedal device according to drawing no. 1 157  
061 installed in BMW 750i since March 1987

D10: ATZ Automobiltechnische Zeitschrift 89 (1987) 6,  
S. 301, 302 und 305 bis 310; R. Hofmann and al.:  
"Der neue BMW 7' - Teil 2"

D11: MTZ Motortechnische Zeitschrift 48 (1987) 9,  
pages 315 to 318 und 321 to 323; A. Fischer and  
al.: "Der neue BMW-12-Zylinder-Motor mit 5l  
Hubraum - Teil 1"

D12: DE-A-3 411 393

III. In response to a communication of the board the  
respondent (opponent) has filed the following  
additional prior art documents:

D13: DE-C-2 841 988

D14: DE-A-2 652 649

D15: DE-B-1 191 693.

Oral proceedings before the board were held on  
18 January 2000, during which the appellant submitted  
five sets of claims as the basis for a main and four  
auxiliary requests.

IV. The wording of claim 1 of the main request reads as  
follows:

"A pedal mechanism for controlling the throttle of an internal combustion engine in a vehicle, the mechanism comprising a pivotably mounted suspended pedal (80) coupled to a monitoring device (40, 60) by a coupling means (90) so that the monitoring device monitors pivotal movement of the pedal to provide an input to a computer (93) for controlling the throttle, characterised in that both the monitoring device and the pedal are mounted on a single support structure (14), the support structure including a base (12) arranged to be secured to an upright wall (11) of a cab of the vehicle so as to commonly mount the pedal (80) and the monitoring device (40, 60) on the wall."

Claim 1 of the first auxiliary request reads as follows:

"A pedal mechanism for controlling the throttle of an internal combustion engine in a vehicle, the mechanism comprising a suspended pedal (80) pivotally mounted on a shaft (70) and coupled to a rotatable shaft of a monitoring device (40, 60) by a coupling means (90) so that the monitoring device monitors pivotal movement of the pedal (80) to provide an input to a computer (93) for controlling the throttle, characterized in that both the monitoring device and the pedal are mounted on a single support structure (14), the support structure including a base (12) arranged to be secured to an upright wall (11) of a cab of the vehicle so as to commonly mount the pedal (80) and the monitoring device (40, 60) on the wall and wherein the shaft (42) of the monitoring device and the shaft (70) of the suspended pedal (80) are spaced apart on the support structure (14) such that the shaft (42) of the monitoring device

is higher than the shaft (70) of the suspended pedal (80), and the shaft (42) of the monitoring device is driven by the pedal (80) by means of cooperating segments (52, 75) respectively mounted for rotation with the shaft (42) and on the shaft (70), wherein the curved surfaces of the segments (52, 75) cooperate to provide the said rotation."

Claim 1 of the second auxiliary request reads as follows:

"A pedal mechanism for controlling the throttle of an internal combustion engine in a vehicle, the mechanism comprising a suspended pedal (80) pivotally mounted on a shaft (70) and coupled to a rotatable shaft of a monitoring device (40, 60) by a coupling means (90) so that the monitoring device monitors pivotal movement of the pedal (80) to provide an input to a computer (93) for controlling the throttle, characterized in that both the monitoring device and the pedal are mounted on a single support structure (14), the support structure including a base (12) arranged to be secured to an upright wall (11) of a cab of the vehicle so as to commonly mount the pedal (80) and the monitoring device (40, 60) on the wall, the monitoring device (40, 60) including a spring biased spool, and wherein the support structure (14) includes a single plate-like member which extends from the base (12), and the spool (40) is rotatably mounted to one side of the plate-like member and the suspended pedal (80) and the shaft (70) are mounted to the said one side of the said plate-like member."

V. The appellant (patentee) accepted the pedal mechanism

shown in the drawing D9 as state of the art according to Article 54(2) EPC but argued that the pedal of this device is not a suspended pedal since it is attached to the floor of the vehicle. With respect to the other prior art documents cited by the respondent with regard to novelty the appellant pointed out that the pedal mechanism of document D7 is mounted on the floor of the cabin of the vehicle and therefore again is not a suspended pedal. A suspended foot pedal however clearly differentiates from a floor mounted foot pedal, as is pointed out in column 2, lines 38 to 43 of the impugned patent. A suspended foot pedal is shown in document D6, but this pedal and the corresponding potentiometer are mounted on different support structures. The appellant concluded that the subject-matter of claim 1 of the main request is novel with regard to the prior art disclosed in the drawing D9 and in the documents D6 and D7 cited by the respondent in respect to novelty.

With regard to inventive step the appellant maintained that a particular problem arising in the prior art relates to the possible flexing that might occur in the wall of the cab to which respectively pedal and sensor mounting plates are connected. The present invention provides the combination of a suspended pedal and a monitoring device with a common mounting plate and dictates that the pedal and monitoring device are mounted in cantilever fashion and so would flex together about the common mounting point on the cab wall such that appropriate registration between the pedal and monitoring device is maintained in spite of any such wall flexing. In response to a question of the board the appellant alleged that this problem, although not explicitly disclosed, was inherent in the



description of the patent in particular in the demand for an improvement of the accuracy of the device.

The appellant further argued that although prior art document D6 discloses a suspended pedal arrangement, and prior art documents D3 and D5 each disclose a pedal and a sensor arrangement mounted on a common plate, the skilled person confronted with the problem of inaccurate transmission of the movement of the pedal to the monitoring device because of wall flexing in a suspended pedal arrangement would not consider this common plate mounting device, since the nature and disposition of the angled plate shown in documents D3 and D5 do not disclose a stable plate construction and tend to flex. The appellant came to the conclusion that the mentioned prior art documents, whether taken alone or in combination with one another could not lead to the mechanism of claim 1 of the main request.

With respect to claim 1 of the first auxiliary request the appellant held that the amended features of this claim 1 are clear and are in accordance with Article 123(2) EPC and considered it as sufficient to state therein that the curved surfaces of the segments cooperate to provide the rotation.

The appellant further brought forward arguments with regard to claims 1 of the second, third and fourth auxiliary requests and maintained that the devices claimed therein are also new and inventive with regard to the cited prior art documents.

VI. The respondent (opponent) explained the pedal device of the drawing D9 on the basis of a model and argued that

the pedal mechanism of claim 1 of the main request is not novel with regard to this prior use since this pedal although attached by its lower end to the floor of the cab must be considered as a suspended pedal. In this respect the respondent drew the board's attention to the pedal of the brake device disclosed in document D15 which is similarly set with its lower end onto the floor but is called in claim 1 of this document D15 a suspended pedal. The respondent also mentioned documents D13 and D14 which again disclose suspended pedals of brake devices. He furthermore cited documents D6 and D7 with respect to novelty and explained the pedal device of document D7.

With regard to inventive step the respondent considered document D6 as the most relevant document. However, also document D7 or the drawing D9 could be taken as the starting point in assessing inventive step. Starting from the state of the art disclosed in document D6 the skilled person would on the basis of his normal skill mount the suspended pedal and the potentiometer on one common support structure since these two elements work closely together and it would be more complicated to provide them on two different support structures. Furthermore, documents D3, D5 and D7 already disclose the advantages of a common structure for the two elements. The respondent concluded that the subject-matter of claim 1 of the main request does not involve an inventive step.

With regard to claim 1 of the first auxiliary request the respondent argued that the amended features lack clarity and contravene Article 123(2) EPC.

The respondent further maintained with respect to claim 1 of the second auxiliary request that in the mechanism of the drawing D9 the spool and the suspended pedal are both mounted on the same side of a plate-like member which extends from a base of the support structure. He also drew the board's attention to document D12 and explained that the monitoring device with the spring biased spool described therein is part of the pedal mechanism of the drawing D9. To provide only a single plate-like member instead of two plate-like members as disclosed in the drawing D9 is a normal design modification for the skilled person, who is familiar with single supported shaft constructions and both side supported shaft constructions. The respondent therefore maintained that the pedal mechanism of claim 1 of the second auxiliary request is not inventive.

With regard to claims 1 of both the third auxiliary request and the fourth auxiliary request the respondent alleged that the subject-matter of both claims 1 does not involve an inventive step.

VII. *Requests*

The appellant (patentee) requested that the decision under appeal be set aside and that the patent be maintained on the basis of the following documents:

Claims:                    Claims 1 to 9 of either of the main or first auxiliary requests, or claims 1 to 7 of either of the second or third auxiliary requests, or claims 1 to 5 of the fourth auxiliary

request.

Description: Columns 1 and 2 as submitted in the oral proceedings and columns 3 to 6 as granted.

Figures: Figures 1 to 4 as granted.

The respondent (opponent) requested that the appeal be dismissed.

### **Reasons for the Decision**

1. The appeal is admissible.
2. *Main request*
  - 2.1 Novelty

The pedal mechanism of claim 1 differs from the mechanism of document D6 by the common support structure for the pedal and the monitoring device. It also differs from the device of documents D3, D5 and the drawing D9 by the pedal being a suspended pedal, and it differs from the device of document D7 by the fact that this pedal mechanism is not suitable for mounting on an upright wall. It is true that in the description of document D7 (column 2, lines 24 to 28) it is only stated as an example that "the base 32 is adapted for connection to, for example, the floorboard" however, the pedal of document D7 disclosed in Figure 7 is clearly designed to be floor mounted and the bent portion at the lower end of the pedal seems to be

provided for this reason. The board therefore cannot agree with the opinion of the respondent that the device could be mounted to an upright wall of the cab of the vehicle with the bent end portion of the pedal at the upside position. The pedal mechanism of the drawing D9 comprises a pedal which is attached to the floor of the cabin. Although in document D15 a brake pedal which also is attached to the floor has been called a suspended pedal this cannot be compared with the present case in which the description clearly differentiates between a suspended pedal and a floor mounted pedal (see column 2, lines 38 to 43 of the impugned patent).

Documents D1 to D5, D8 and D10 to D14 are of less importance in respect to novelty.

The subject-matter of claim 1 of the main request therefore is novel.

## 2.2 Closest prior art

The closest prior art compared with the subject-matter of claim 1 of the main request is disclosed in document D6. Document D6 shows a pedal mechanism with all the features of the pre-characterising part of claim 1 and in addition a base of a support structure arranged to be secured to an upright wall of a vehicle cab.

## 2.3 Problem and solution

### 2.3.1 Problem

Starting from document D6 the technical problem of the

invention is to provide a compact pedal mechanism mountable on a vehicle cab, to simplify the provision of different potentiometers in the pedal mechanism and to guarantee an appropriate registration between the pedal and the sensor.

### 2.3.2 Solution

By mounting the pedal and the monitoring device on a single support structure a compact mechanism is obtained in which only simple changes are necessary if a different potentiometer is used and in which the pedal and the monitoring device flex together about the common mounting point on the cab fire wall if flexing of this wall occurs, which guarantees an appropriate transmission of the movement of the pedal to the sensor.

## 2.4 Inventive step

2.4.1 According to document D6 (Fig. 1) both the monitoring device and the suspended pedal are mounted close together to an upright wall of a cab of the vehicle and the pedal is connected to the monitoring device by a mechanical link, which moves the monitoring device in accordance with the movement of the pedal. Although the two elements are shown in the schematic drawing (Fig. 1) of document D6 to be mounted on two different support structures each provided with a base, the skilled person would not stick to this mounting arrangement but would use his normal skills to simplify this close mounting by providing both elements with its operational mechanical connection on one common support structure. This simple, obvious general idea of

mounting cooperating elements on a common basis or support structure cannot have an inventive merit, particularly since documents D3, D5 and D7 already disclose a pedal mechanism in which both the monitoring device and the pedal are mounted on a single structure and documents D3 (page 7, right hand column, section 3.3.1 "Der Sollwertgeber") and D7 (see column 1, lines 29 to 42) describe the advantages of such a compact unit for a simple arrangement in the vehicle.

- 2.4.2 The subject-matter of claim 1 of the main request therefore does not involve an inventive step (Article 56 EPC), so that the main request is not in accordance with Article 52(1) EPC and is therefore refused.

3. *First auxiliary request - Amendments of claim 1*

- 3.1 During the oral proceedings claim 1 was amended as follows (last feature):

"and the shaft (42) of the monitoring device is driven by the pedal (80) by means of cooperating segments (52, 75) respectively mounted for rotation with the shaft (42) and on the shaft (70), wherein the curved surfaces of the segments (52, 75) cooperate to provide the said rotation".

- 3.2 The segments with curved surfaces (52 and 75) are disclosed on page 5, lines 15 to 21 of the originally filed description (column 3, lines 50 to 57 of the granted patent: see "segment 52"), on page 5, line 33 to page 6, line 2 of the originally filed description (column 4, lines 12 to 16 of the granted patent: see

segment 75), in the drawings as well as in the originally filed claim 4 (granted claim 7), but the cooperation of these segments is only disclosed in combination with a flexible link (90) as defined in originally filed claim 4 (granted claim 7). There is nothing in the patent and in the original application documents which discloses a cooperation of the curved surfaces of the segments in general (as claimed now), i.e. without a flexible link. Such a general cooperation may for instance include a direct cooperation of the curved surfaces.

3.3 Since there is no basis in the application as originally filed for such a generalisation, claim 1 contravenes Article 123(2) EPC. The first auxiliary request is thus refused.

#### 4. *Second auxiliary request*

##### 4.1 Amendments

Claim 1 of the second auxiliary request differs from claim 1 as granted by the following features (bold letters):

(a) In the pre-characterising portion:

"the mechanism comprising a **suspended** pedal (80) pivotally mounted **on a shaft (70) and** coupled to a **rotatable shaft of** a monitoring device (40, 60) by coupling means (90) so that the monitoring device monitors pivotal movement of the pedal (80)".

(b) In the characterising portion:



**"the monitoring device (40, 60) including a spring biased spool, and wherein the support structure (14) includes a single plate-like member which extends from the base (12), and the spool (40) is rotatably mounted to one side of the plate-like member and the suspended pedal (80) and the shaft (70) are mounted to the said one side of the said plate-like member."**

The suspended pedal is disclosed in column 2, line 26 of the patent (original description page 3, line 3), the shaft 70 of the pedal is disclosed in column 3, line 37 and column 5, lines 1 and 2 of the patent (original description page 5, line 3 and page 7, lines 8 to 10) and the rotatable spool shaft 42 is disclosed in column 4, line 39 (original description page 6, line 24). These features are furthermore shown in the drawings.

The features added to the characterising portion of claim 1 are disclosed in Figures 1, 3 and 4 (a single member which extends from the base), in column 4, lines 34 to 41 (spring biased spool), and in column 3, lines 34 to 53 (the spool and the suspended pedal are mounted to one side of the plate-like member) of the patent (original filed page 6, lines 19 to 26; page 4, line 35 to page 5, line 18).

The added features restrict the protection conferred in granted claim 1.

The description column 2 is adapted to the new claim 1.

The amended claim and description therefore do not

contravene Article 123 EPC.

#### 4.2 Novelty

Since claim 1 has been restricted with respect to the granted claim 1, which is novel, as already has been indicated in above section 2.1, also this claim 1 of the second auxiliary request is novel within the meaning of Article 54 EPC. Furthermore, none of the cited prior art documents discloses a support structure with one single member which extends from the base. The device according to the drawing D9 comprises a support structure with two plate like members extending from the base. The shaft of the pedal, which pedal is attached to the floor and therefore is not a suspended pedal, is supported by the both plate like members. The mechanism shown in document D6, Figure 1, comprises a support structure for the pedal which is separate from that of the monitoring device. Furthermore, Figure 1 of document D6 is only a schematic drawing of a section which only shows one wall of, apparently, a structure with two side walls (also see Fig. 3 of document D6).

#### 4.3 Closest prior art

The respondent considered documents D6, D7 and the drawing D9 as the most relevant with regard to the subject-matter of claim 1 of the second auxiliary request. Therefore, documents D6, D7 and the drawing D9 are taken separately as the starting points in assessing inventive step.

#### 4.4 Problem and solution

The technical problem underlying the invention is with respect to all three prior art structures disclosed in D6, D7 and D9 the provision of a simplified compact mechanism which can be easily mounted on a vehicle cab.

The single plate-like member for mounting the suspended pedal and the monitoring device on one side simplifies the construction and makes it more compact.

#### 4.5 Inventive step

- 4.5.1 Document D6 discloses a suspended pedal and a potentiometer which are mounted on separate support structures. The board accepts that the skilled person would simplify this device and would provide both elements on one common support structure as already explained with regard to claim 1 of the main request (section 2.4 above), however there is no apparent reason for providing only one single plate like member which extends from the base and whereon a spring biased spool and the suspended pedal is mounted on one common side. Figure 1 of document D6 which is a schematic drawing of a section of a structure which apparently comprises two plate-like members does not show a spring biased spool mounted on the front side of the illustrated plate-like support member, i.e. on the same side as the suspended pedal is mounted. The skilled person would therefore not be led by this document D6 to a pedal device with only a single plate like support member having the spool and the suspended pedal mounted on one side. Considering Figure 3, document D6 would lead to a construction with two plate-like support members. Since none of the other cited prior art documents and the drawing D9 discloses a support

structure with a single plate like member having the spool and the suspended pedal on the same side, the skilled person cannot be led to the pedal mechanism of claim 1 by the cited documents.

4.5.2 Document D7 discloses a pedal mechanism which is mountable to the floor of the vehicle. Although the connection to the floor is only mentioned as an example (column 2, lines 24 to 28) the structure of the pedal is such that a mounting on an upright wall of the cab is not obvious. It is true that the monitoring device and the pedal are mounted on one common support structure and a spring biased spool and the pedal are mounted to the same side of a support member which extends from a base, however the support structure comprises two extending support members for supporting the pedal and the monitoring device. Even if the skilled person were to modify the pedal mechanism of document D7 such that it is mountable to an upright wall of the cab, the mechanism of claim 1 with a single plate-like member for mounting the pedal and the monitoring device on one side would be not obtained.

4.5.3 The pedal mechanism of the drawing D9 again comprises two plate-like support members extending from a common base. The shaft of the pedal is supported by both support members. The monitoring device, which might be a device similar to that shown in document D12, apparently comprises a spring biased spool. Although the spool is operatively connected to the pedal device on the same side where the pedal is mounted, the spool is not provided on this side as a whole but partly extends through a bore of this support member. According to claim 1 of the second auxiliary request

however, the spring biased spool, i.e. the spring biased spool as a whole with the spring device is mounted on the same side to which the suspended pedal is mounted. Furthermore, according to this claim 1 the spring biased spool is rotatably mounted to this side of the plate-like member, whereas in the device of D9 (also see document D12) the spring biased spool is rotatably mounted in a casing and this casing is mounted on the support member. The mechanism of the drawing D9 therefore cannot lead to the pedal mechanism of claim 1, either alone or in combination with the other cited documents, since none of them discloses a support structure with a single plate like member for supporting the pedal and the monitoring device.

4.5.4 The pedal mechanism of claim 1 therefore, involves an inventive step (Article 56 EPC).

4.5.5 The patent may thus be maintained based on the documents of the second auxiliary request.

5. Having allowed the appellant's second auxiliary request, the board does not need to consider the third and fourth auxiliary requests.

## Order

### For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance with the order to maintain the patent in the following version:

Claims: 1 to 7 according to the second auxiliary request as submitted in the oral proceedings on 18 January 2000.

Description: Columns 1 and 2 as submitted in the oral proceedings on 18 January 2000, and columns 3 to 6 as granted.

Figures: 1 to 4 as granted.

The Registrar:

The Chairman:

G. Magouliotis

C. Andries