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(54) **Control pedal for controlling an actuator of a motor vehicle, provided with rotation pin with fixing of the electronic sensor**

(57) Described herein is a control pedal for controlling an actuator of a motor vehicle comprising a rotation

pin with snap-action fixing with inside it an Oldham coupling for its connection in rotation to the rotor of a position sensor.

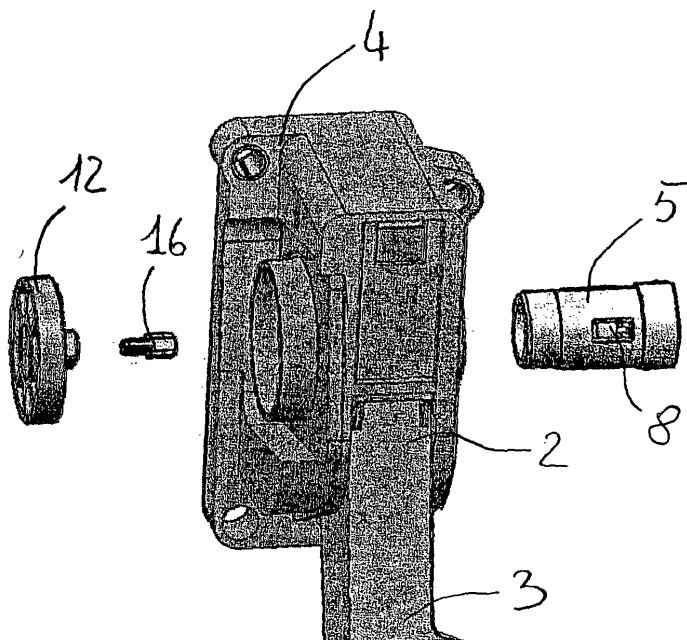


Fig 1

Description

[0001] The present invention relates to a control pedal for controlling an actuator mounted on a motor vehicle, provided with rotation pin with an advanced fixing system in addition to a system for annulling the thrusts normal to the plane of rotation of the arm of the pedal, which can be applied by the foot of the driver of the means and which have an adverse effect on the precision of the electrical/electronic sensor with which the pedal as a whole is equipped.

[0002] The known art envisages that, for fixing the rotation pin of a control pedal for controlling an actuator mounted on a motor vehicle, there will be adopted the classic method of forced interference fit or else fixing via screws or bolts, which entails an accurate machining in the former case and long times in the latter case, with consequent increase in costs.

[0003] Likewise, the known art envisages that the rotor of the sensors will be fitted directly to the arm of the pedal by means of the rotation pin thereof. Said type of transmission of the motion means that any possible lateral thrusts applied to the pedal will be transmitted to the rotor of the sensor with consequent relative movement between the latter and the static part of the sensor itself, consequently introducing errors in the electrical signal at output from the sensor.

[0004] The purpose of the present invention is to provide a device that will enable transmission between the arm of the pedal and the rotor of the sensor of exclusively rotational motion, and at the same time, to provide a fixing system for a control pedal for the electrical or electronic control of an actuator of a motor vehicle that will overcome the aforesaid drawback and at the same time will have a low cost.

[0005] The above and further purposes are achieved by the present invention, the subject of which is a pedal for controlling a device of a motor vehicle provided with a control pedal for electrical or electronic control of an actuator that has the characteristics specified in Claim 1.

[0006] Further characteristics and advantages will emerge clearly from the ensuing description, with reference to the attached plates of drawings, which are provided purely by way of non-limiting example and in which:

- Figure 1 is a front exploded view of the top part of a control pedal of a motor vehicle provided with the pin according to the invention;
- Figure 2 is a cross-sectional view from above of the pin according to the invention, mounted on the top end of the pedal illustrated in Figure 1;
- Figure 3 is an enlarged view of the Oldham coupling illustrated in Figure 1; and
- Figure 4 is an enlarged view of the pin according to the invention.

[0007] With reference to the figures, designated as a whole by 1 is a pedal for controlling an actuator mounted

on a motor vehicle and made of plastic material, said pedal being designed to control the actuator via an electrical or electronic control system, i.e., without there being necessary a mechanical connection, for example, a Bowden cable.

[0008] The pedal is pivoted at the top end 2 of its arm 3, on a support 4, which is in turn fixed to a fixed point of the vehicle via common fixing means, for example, screws (not represented). The axis of fulcrum is constituted by a cylindrical pin 5 provided with an axial internal cavity 6 and made of plastic material. The cylindrical pin 5 has two flattened portions 7, on the top and bottom walls, and two snap-action couplings 8 on the right-hand-side and left-hand-side walls. The flattened portions 7, in collaboration with corresponding flattened portions (not illustrated) made on the end 2, have the purpose of enabling insertion of the pin 5 in the support 4 and in the end 2 only in two definite positions so that the snap-action couplings, when the pin is in the operative position, will be positioned in areas corresponding to openings 10 made in the end 2 and constituting the point of arrest thereof. The pin 5 moreover has an end of larger diameter and an end of smaller diameter with respect to the central body so as to form two detents for the movement of insertion of the pin 5, one on the outer surface of the end 2 of the pedal, and the other on the inner surface of the body of the support 4, as may be seen in Figure 2.

[0009] Connected to the pin 5 is the rotor 12 of a position sensor 14. In order to transmit, between the arm of the pedal and the rotor of the sensor, exclusively the rotational motion without the thrusts normal to the plane of rotation thereof, the aforesaid rotor is connected to the pedal via an Oldham coupling 16, which, according to the present embodiment, is made of plastic material but may be made of any suitable material, said Oldham coupling 16 being housed in two slots 17 and 18, one made in the pin 5 and the other in the rotor 12.

[0010] The Oldham coupling 16 has on its walls in contact with the slots 17 and 18 elastic elements 20 in the form of laminas, made as a single casting, which enable forced positioning and withholding of the Oldham coupling 16 within said slots. The Oldham coupling 16 has a length such as not to reach the bottom of the slots and consequently such as to be able to slide within them.

Claims

1. A control pedal for the electrical or electronic control of an actuator of a motor vehicle, comprising in combination: a) a supporting structure (4); b) a pedal arm (3), the top end (2) of which is pivoted on the supporting structure (4); d) an axis of rotation (5) of said arm (3) of the pedal; c) a position sensor (14) provided with a rotor (12) sharing the axis of rotation of the pedal, said control pedal being **characterized in that** said axis of rotation (5) is constituted by a hollow cylinder made of plastic material, provided

with means for clamping by snap-action on the end (2) of the arm (3).

2. The control pedal according to Claim 1, **characterized in that** the cylindrical pin (5) has two flattened portions (7), on the top and bottom walls, and two snap-action couplings (8) on the right-hand-side and left-hand-side walls. 5
3. The control pedal according to Claim 1, **characterized in that** the snap-action couplings (8) are positioned in openings (10) made in the end (2). 10
4. The control pedal according to Claim 1, **characterized in that** the rotor of the position sensor is connected in rotation to the cylindrical pin (5) via an Oldham coupling (16). 15
5. The control pedal according to Claim 4, **characterized in that** the Oldham coupling is made of plastic material. 20
6. The control pedal according to Claim 1, **characterized in that** the Oldham coupling (16) is inserted in slots (17, 18) made one in the pin (5) and the other in the rotor (12). 25
7. The control pedal according to Claim 1, **characterized in that** the Oldham coupling (16) has on its walls in contact with the slots (17, 18) elastic elements (20) in the form of laminas. 30

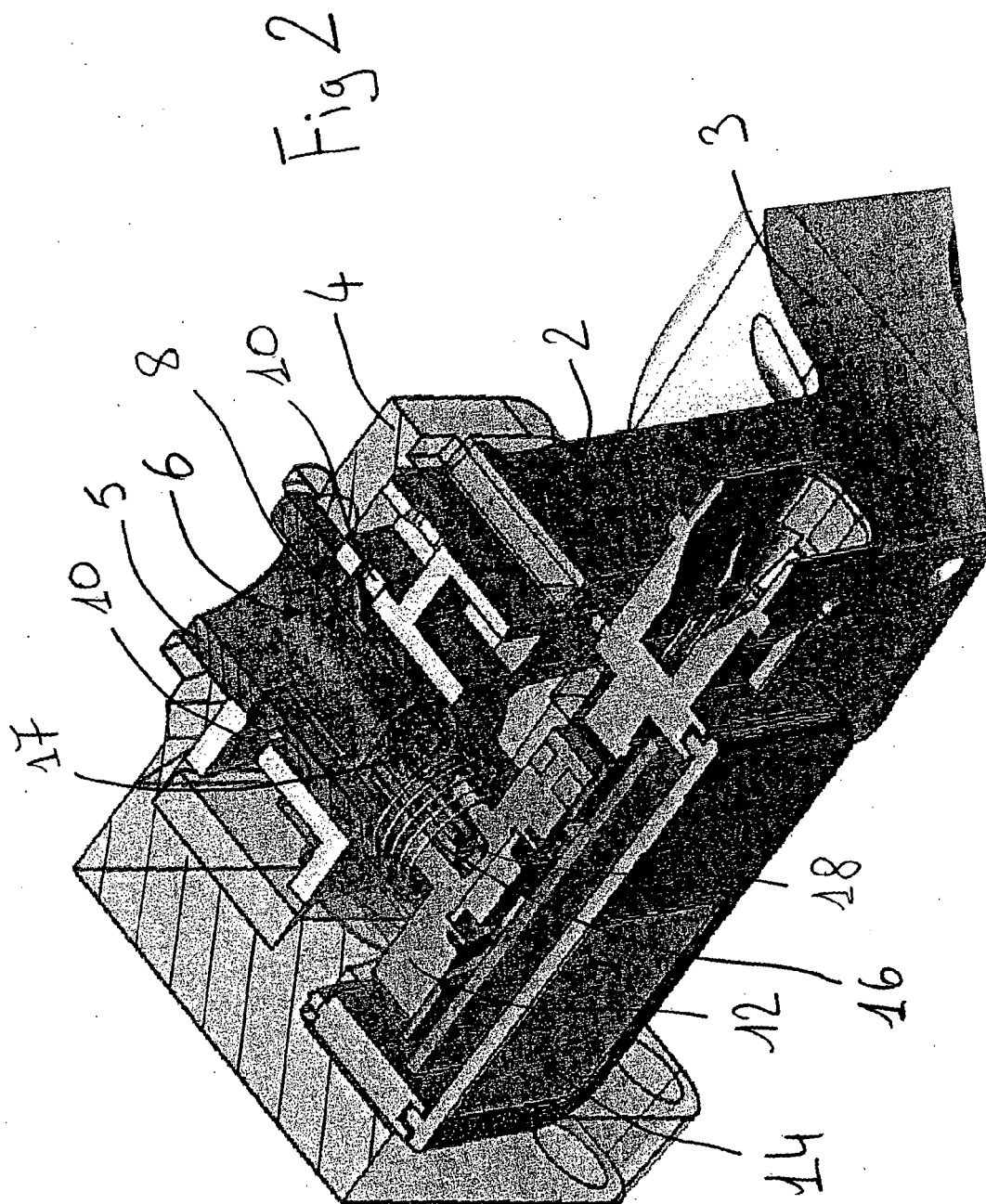
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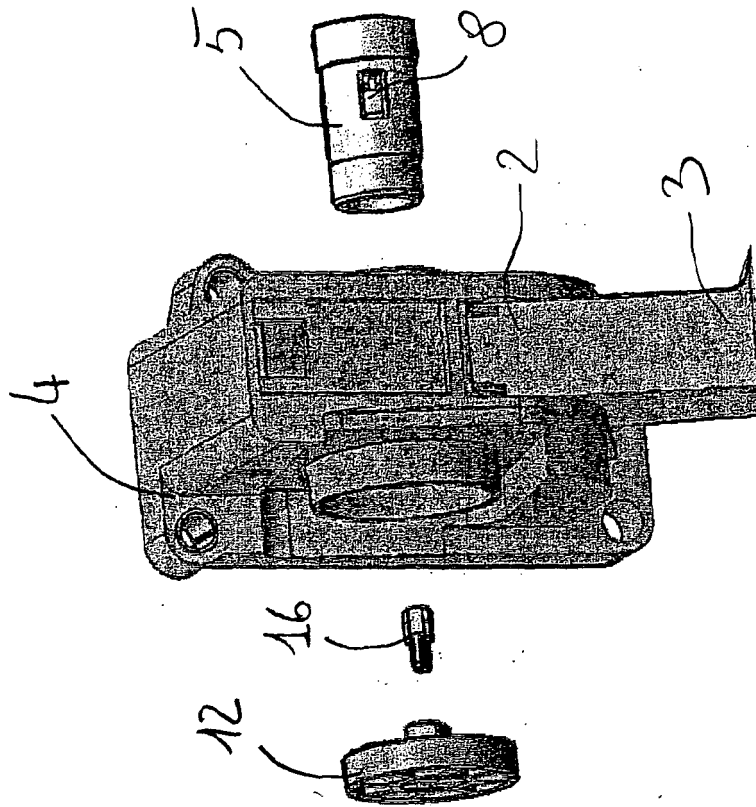


Fig 1

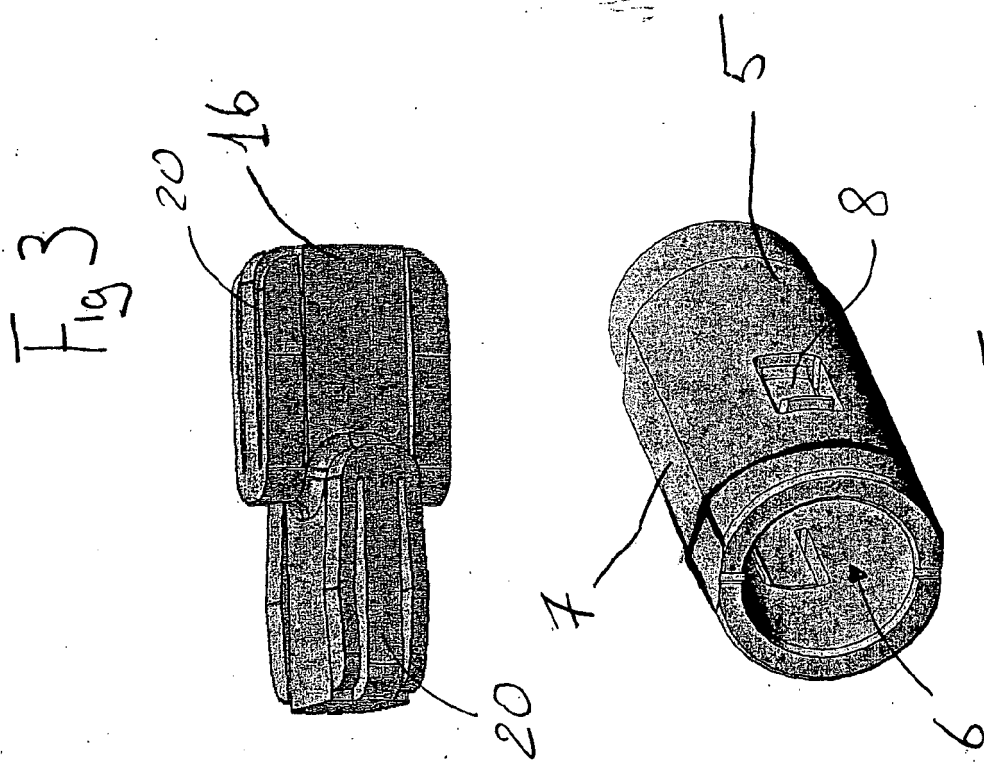


Fig 3

Fig 4



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 00 2152

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The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			G05G G01D
Place of search		Date of completion of the search	Examiner
The Hague		13 May 2008	Clasen, Martin
CATEGORY OF CITED DOCUMENTS		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 08 00 2152

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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