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(54) **Adjustable pedal for motor-vehicles**

(57) Structure of a pedal for motor vehicles, the position of the pedal (7) being adjustable, consisting of an arm rotatably supported by fixed parts of the motor vehicle, including a footboard, connected at its free end. Said means, adapted to adjust the position of the arm and including a coupling lead-screw (25), being associated to the arm consisting of a hollow body (10) of rectangular plant where an elongated element (15) is located connected to one of the services of the motor vehicle, rotatably integral with it and translatable along its longer axis through means controlled by the driver.

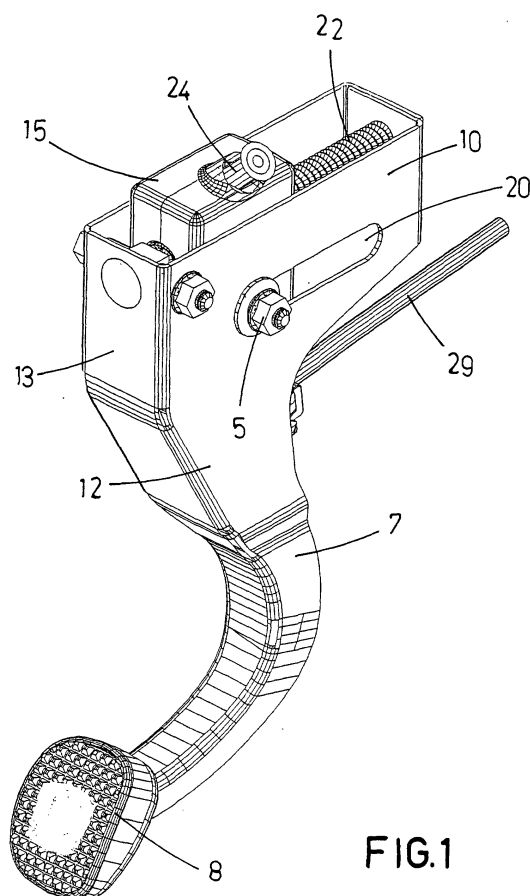


FIG.1

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Description

[0001] The present invention refers to an adjustable pedal for motor-vehicles. More in particular the invention refers to the structure of a pedal for motor vehicles, the position of the pedal being adjustable so that maximum comfort is provided to drivers of any height.

[0002] Motor vehicles are generally provided with pedals adapted to control acceleration, braking and engagement of the clutch. Said pedals generally consist of an arm which is rotatably supported by a bracket which is placed at floor level, a connection means between the accelerator, the brakes or the clutch and the arm of the pedal, and a footboard connected to end of the arm of the pedal which is not articulated in order to allow the driver to push the arm itself

[0003] Adjustment of the position of the pedals becomes necessary in order to achieve the best possible driving position for drivers of different size.

[0004] In order to adjust the position the driver seat is generally moved yet, should the driver be tall, this solution implies that the space for passengers sitting on the backseat is reduced.

[0005] In order to overcome this drawback, pedals have been produced the position of which can be adjusted in the longitudinal direction of the motor vehicle.

[0006] Said devices are known, for example, from patent US 3,643,524, or from EP 0,363,546.

[0007] However, the devices shown in said patents are quite complex, and the sliding systems for the arm of the pedal need high smoothness and therefore continuous maintenance in order to ensure efficiency. This leads to an increase in general maintenance costs.

[0008] Another problem is to be found in the fact that pedals normally used are realised by coupling a metal shell and a plastic mesh. These pedals are more economical and especially lighter so that fuel consumption is lower. However, their arm is considerably longer than that of metal pedals, so that adjustment systems are required that can fit in without occupying additional space in places where space is not always available.

[0009] It is an object of the present invention to provide a structure for an adjustable pedal that overcomes the aforementioned drawbacks, providing optimum adjustment allowing the achievement of the best possible driving position.

[0010] Said object is achieved by means of a structure of an adjustable pedal presenting the characteristics set forth in claim 1.

[0011] The present invention will become more clear from the following detailed description referring to the appended drawings of a preferred embodiment, provided as non restrictive illustration of the invention, and in which:

- figure 1 is a perspective view of the pedal according to the invention,
- figure 2 is a partially sectioned side view of the pedal

in figure 1, and

- figure 3 is a section view of a part of the pedal in figure 2, along line II-II.

[0012] With reference to the figures, reference number 1 indicates the structure of an adjustable pedal in the position according to the present invention.

[0013] This structure generally includes a U-shaped bracket, consisting of a base and two side walls 3 (partially visible in figure 3). The base is connected by known means to the bodywork of the motor-vehicle at a place under the dashboard a little above the floor. On the side walls of the bracket 3 the arm of the brake pedal is pivoted by means of an axle 5 at the upper end opposite to the end supporting the footboard. Said end consists of a body 10 the shape of which is that of a hollow parallelepiped, with no upper and lower wall and the larger walls of which 12 extend in order to joint the arm of the pedal itself. The section of the pedal is U-shaped and its walls are connected to the larger side of said parallelepiped while the width of its base is equal to one of the shorter sides 13 of the parallelepiped, which forms also its extension.

[0014] Inside the body 10 there is an elongated element 15 serving as support and guide to the arm of the pedal. The axle 5 is slidingly located into a pair of holes 20 made on each one of the longer walls 12 of the parallelepiped, parallel to its longer axis. A toothed lead 22 is fixed at the two smaller walls 13 of the body 10, the axle being included in the vertical middle plane of the parallelepiped and higher than the holes 20. The element 15 presents a cylindrical seat 23 formed by a bush 23a, adapted to make it slide along the lead 22. Besides, a seat 24 tangent to the cylindrical seat 23 is present on its upper part, inside said seat being placed a worm screw 25 controlled by means of flexible transmission 26 which becomes engaged with the lead 22. There are also a transversal through hole 26, where the axle of rotation 5 is inserted, and a snap seat 28 adapted to fast snap a control cap 29 of a service for the motor vehicle, for example a servo brake.

[0015] The U-shape of the arm and the parallelepiped shape 10 of the upper terminal body, allow to define a closed space equivalent to the size of the arm of the pedal which can then house the connection and adjustment devices, protecting them from possible impacts and reducing the overall dimensions of the structure.

[0016] With the structure of the pedal of the invention the brakes and/or clutch and/or accelerator will be controlled through the rotation, according to the arrow A in figure 2, of the whole arm 7 on the axle 5, as a consequence of a power applied by the driver on the footboard 8, with the following displacement of the cap 29, due to the thrust of the body 15. Being integral with to the arm 7 by means of the lead 22, it will rotate on the axle 5 together with the arm 7. The adjustment of the position of the footboard 8 of the pedal in relationship to the support 3 will be achieved by means of the flexible trans-

mission 26, controlled, for example, by an electrical engine, acting on the worm screw 25 in order to screw or unscrew it to make the arm 7 and its parallelepiped part 10 slide forward or backward on the holes 20, thus moving the footboard 8 of the pedal in relationship to the seat of the driver.

[0017] It is clear that the form of the component parts as well as the structure can be modified at the connection points, and that the worm screw can be replaced with any equivalent means, e.g. an hydraulic piston, without going beyond the scope of the present invention as disclosed in the appended claims.

made on the larger walls (12) of the body (10) parallel to its longer axis.

- 5 5. Structure of a pedal as claimed in claim 1, **characterised in that** the worm screw is controlled by means of a flexible control.
- 10 6. Structure of a pedal as claimed in claim 1 and 4, **characterised in that** the axle of rotation (5) is supported by the side walls (3) of a bracket integral with the bodywork of the motor-vehicle.

Claims

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1. Structure of a pedal for motor vehicles, the position of the pedal being adjustable, realised by coupling a metal shell with a plastic mesh, consisting of an arm (7) rotatably connected to a support (3) hold by fixed parts of the motor vehicle, said arm including a footboard, connected at its free end in order to allow the driver to operate it, means adapted to adjust the position of the arm, including a coupling lead-worm screw, being associated to said arm and controllable by the driver, **characterised in that** the end of the arm (7) which is not connected to the footboard consists of a hollow body (10) of rectangular plant, the larger walls (12) of which extend in order to joint the arm (7); an elongated element (15), connected to one of the services of the motor vehicle being located inside the hollow body (10), rotatably integral with it and translatable along its longer axis through means controlled by the driver, in order to vary its position in relationship to the body (10) of the arm of the pedal (7).

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2. Structure of a pedal as claimed in claim 1, **characterised in that** the means intended to rotatably lock and translate said element (15) in relationship to the body (10) are contained inside said hollow body (10).

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3. Structure of a pedal as claimed in claim 1, **characterised in that** the means intended to rotatably lock and translate said element (15) in relationship to the body (10) of the arm of the pedal (7), consist of a lead (22) integral with the body (10) at its longer axle on which there is slidingly inserted, by means of a hole (23), the element (15) with a worm screw (25) adapted to become engaged with said lead so that when the screw (25) rotates the element (15) moves along the lead (22).

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4. Structure of a pedal as claimed in claim 1, **characterised in that** the arm (7) of the pedal rotates around an axle of rotation (5) which passes through the element (15) and slides into two holes (20)

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