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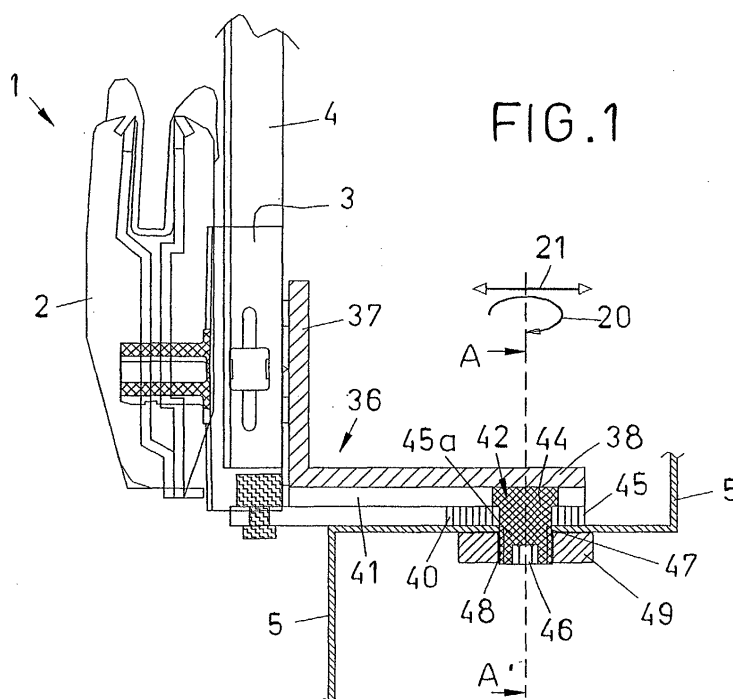
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(54) **Device for lateral regulation of a window power device for motor vehicles**

(57) It includes a plate comprising at least a vertical plane attached to the rail of the power window device and a horizontal plane capable of sliding relative to the door of the vehicle and which includes a longitudinal groove inside of which a cylindrical piece runs meshed with a toothing provided on the inner lateral surface of the groove. Said piece extends into a lower portion and rotation thereof results in the displacement of the plate and the lateral movement of the power window device. The lower portion of the piece is provided by an outer

threaded portion adapted for receiving a fastening nut intended for fixing the relative position of said plate relative to the vehicle door once the lateral position of the power window device has been adjusted.

The lower portion of the piece includes a hole adapted for the insertion of a drive tool for rotating said cylindrical piece and causing the displacement of the power window device to the desired position relative to the door. Said lower portion projects from the groove and passes through a hole of the vehicle door. The fastening nut fixes the position of said plate relative thereto.



Description

[0001] The present invention relates, as stated in its title, to an improved device for lateral regulation of a window power device for motor vehicles, which novel manufacturing, conformation and design features fulfil the purpose to which it has been specifically conceived, with a maximum safety and effectiveness and providing advantages as it will be detailed in the present specification.

[0002] A power window device for motor vehicles essentially comprises, whether it is manually or automatically operated, a window pane moveable along a guide rail, window pane driving means and window pane fastening means. Window pane driving means include at least a clamp which holds the window pane by the lower edge thereof and it is joined to a sliding member that slides along said guide rail.

[0003] In many cases it is important to be able to carry out an appropriate regulation of the window pane position during the assembly operation of the power window device, especially a fine lateral regulation thereof with the purpose of correcting deformation errors of the vehicle door bodywork, taking up tolerances or ensuring the sealing conditions of the assembly.

[0004] The present invention refers to an improved device for the lateral regulation of a power window device that carries out said function of lateral regulation of the power window device in a simple and extremely effective way. Said device is part of the power window device itself and it essentially comprises a plate formed of at least a vertical plane attached to the rail of the power window device and a horizontal plane capable of sliding relative to the vehicle door. Said horizontal plane of the plate includes a longitudinal groove inside of which a cylindrical piece runs meshed with a tothing provided on the inner lateral surface of said longitudinal groove. The cylindrical piece extends into a lower portion provided with an inner hole, for example a hole of the hexagonal type to be actuated by means of an Allen wrench. Rotation of said piece therefore results in the displacement of the plate and the lateral movement of the power window device.

[0005] According to the invention, said lower portion of said cylindrical piece is further provided with an outer threaded portion adapted to receive a fastening nut. Said nut has the purpose of fixing the relative position of the plate relative to the vehicle door once the lateral position of the power window device has been adjusted.

[0006] Said lower portion of the cylindrical piece projects from the longitudinal groove passing through a hole of the vehicle door with said nut fixing the position of the plate relative to the door.

[0007] With the improved device herein described window pane regulation in a motor vehicle door is made possible in a considerably simple way, with a reduced cost of production as the number of pieces is reduced as with a single mechanism it is possible adjusting and

fixing the position of the power window device. On the other hand, the fact should be stressed that the device of the invention is considerably robust.

[0008] The features and the advantages of the device for lateral regulation of a power window device of the present invention will be clearer from the detailed description of preferred embodiments which will be given hereinbelow by way of non limitative examples, with reference to the drawings herein accompanied, in which:

Fig. 1 is a side elevation cutaway view of a power window device provided with a device for lateral regulation according to the invention;

Fig. 2 is a plan view of the plate of the embodiment of the device in Fig. 1; and

Fig. 3 is an end elevation view of the plate of the embodiment of the device in Fig. 1 taken along line A-A' in said Fig. 1 and without the fastening nut for further clarity.

[0009] Reference numerals used to define the different parts in the embodiments of the invention are as follows:

- (1) power window device;
- (2) fastening clamp;
- (3) sliding member;
- (4) rail;
- (5) vehicle door;
- (20) direction of rotation;
- (21) direction of displacement;
- (36) plate;
- (37) vertical plane;
- (38) horizontal plane;
- (39) groove lateral end;
- (40) groove lateral end;
- (41) longitudinal groove of the horizontal plane;
- (42) cylindrical piece;
- (44) threaded cylindrical portion of the cylindrical piece;
- (45) groove tothing of the horizontal plane;
- (45a) lower portion of the cylindrical piece;
- (46) central hole of the cylindrical piece for wrench insertion;
- (47) hole of the door bodywork;
- (48) outer thread of the cylindrical piece lower portion; and
- (49) fastening nut.

[0010] A preferred embodiment of a device for lateral regulation of a power window device is now described with reference to the figures by way of an illustrative but not limitative example according to the invention.

[0011] The device that is herein described is fitted in a conventional power window device (1), which comprises a clamp (2) for holding the window pane (not shown) by the lower edge thereof and a sliding member (3) running along a guide rail (4) fixed to the vehicle door

(5).

[0012] In the embodiment of the device of the invention shown in Figs. 1 to 3, it comprises a substantially L-shaped plate (36) which is formed by a vertical plane (37) attached to the rail (4) of the power window device (1) and a horizontal plane (38) fixed to the lower portion of the door (5) in such a way that it may be displaced as it will be fully described herein after.

[0013] As it can be seen from the cutaway views shown in Figs. 2 and 3 of the accompanying drawings, the plane (38) of the plate (36) is bent inboard by their lateral ends (39, 40) defining a downward C cross-section forming a longitudinal groove (41).

[0014] A cylindrical piece (42) is provided housed in said longitudinal groove (41) of the horizontal plane (38) of the plate. The piece (42) has a cylindrical portion (44) provided with toothing in the lateral surface thereof. Said toothing is attached meshed with a toothing (45) provided on the inner lateral surface (39, 40) of said horizontal plane (38). The piece (42) extends according to a lower cylindrical portion (45a) that is inserted as shown into a hole (47) of the door bodywork (5).

[0015] The lower cylindrical portion (45a) is provided with an inner central hole (46) adapted for receiving a drive tool such as an "Allen" ball-type wrench allowing said cylindrical piece (42) to be rotated by an operator for lateral regulation of the position of the power window device (1) relative to the vehicle door (5).

[0016] Rotation of the cylindrical piece (42) according to arrows (20) results in the displacement of the plate (36) in the direction shown by arrows (21) due to the meshing engagement of the toothing of the portion (44) of the cylindrical piece (42) in the longitudinal toothing (45) provided on the inner lateral surface of the ends (39, 40) of the horizontal plane (38). This allows, as it has been noted, the lateral regulation of the plate (36) relative to the door (5) and, therefore, the lateral displacement of the power window device (1) to the desired position.

[0017] The final position is ensured by providing a fastening nut (49) in said lower portion (45a) of the piece (42) (see Fig. 1) screwed in a threaded outer portion (48) thereof. Tightening of the nut (49) fixes the plate (36) to the vehicle door (5) once the lateral position of the power window device (1) has been adjusted.

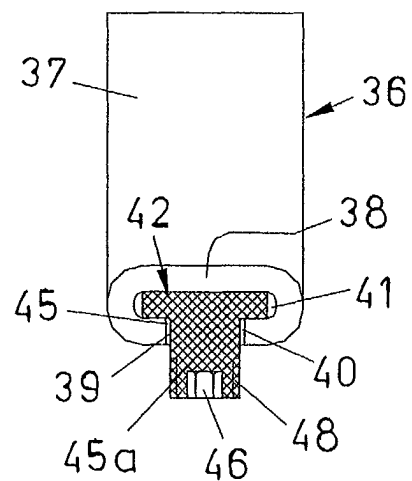
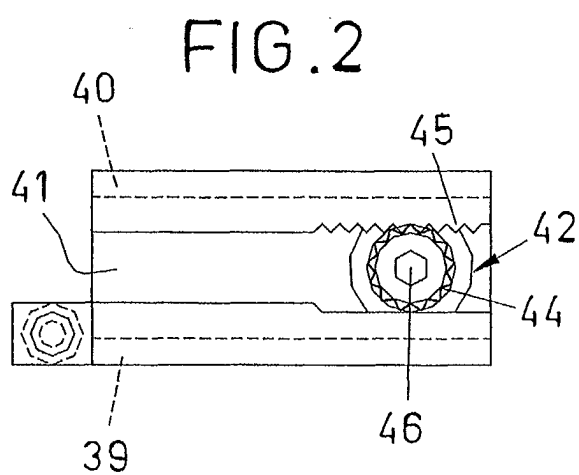
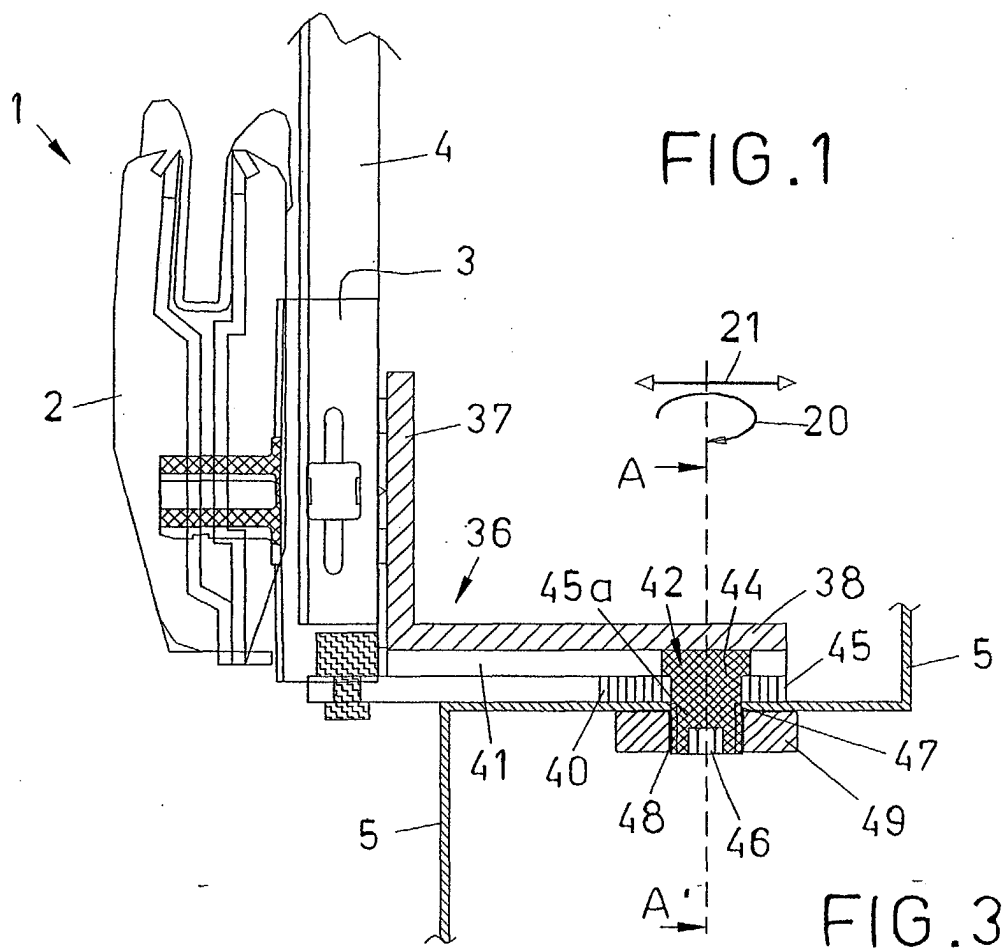
[0018] Once having been sufficiently described what the present patent application consists in accordance to the enclosed drawings, it is understood that any detail modification can be introduced as appropriate, provided that variations may alter the essence of the invention as summarised in the appended claims.

Claims

1. Device for lateral regulation of a window power device for motor vehicles including a plate (36) comprising at least a vertical plane (37) attached to the

rail (4) of the power window device and a horizontal plane (38) which may slide relative to the door (5) of the vehicle and which includes a longitudinal groove (41) inside of which a cylindrical piece (42) runs meshed with a toothing (45) provided on the inner lateral surface (39, 40) of the groove (41), said piece (42) extending into a lower portion (45a), rotation of said piece (42) resulting in the displacement of the plate (36) and the lateral movement of the power window device (1), **characterized in that** said lower portion (45a) of the piece (42) is provided by an outer threaded portion (48) adapted for receiving a fastening nut (49) intended for fixing the relative position of said plate (36) regarding the vehicle door (5) once the lateral position of the power window device (1) has been adjusted.

2. Device for lateral regulation of a window power device for motor vehicles as claimed in claim 1, **characterized in that** said lower portion (45a) of the piece (42) includes a hole (46) adapted for the insertion of a drive tool for rotating said cylindrical piece (42) and causing the displacement of the power window device (1) to the desired position relative to the door (5).
3. Device for lateral regulation of a window power device for motor vehicles as claimed in claim 1, **characterized in that** the lower portion (45a) of the piece (42) projects from said groove (41) passing through a hole (47) of the vehicle door (5), said fastening nut (49) fixing the position of said plate (36) relative thereto.





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 38 0195

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 21 January 2005	Examiner BORRAS GONZALEZ
CATEGORY OF CITED DOCUMENTS 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		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	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 38 0195

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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