



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**23.04.2008 Bulletin 2008/17**

(51) Int Cl.:  
**E05F 11/48<sup>(2006.01)</sup>**

(21) Application number: **07380254.8**

(22) Date of filing: **19.09.2007**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR**  
 Designated Extension States:  
**AL BA HR MK RS**

(71) Applicant: **Daumal Castellon, Melchor**  
**08013 Barcelona (ES)**

(72) Inventor: **Daumal Castellon, Melchor**  
**08013 Barcelona (ES)**

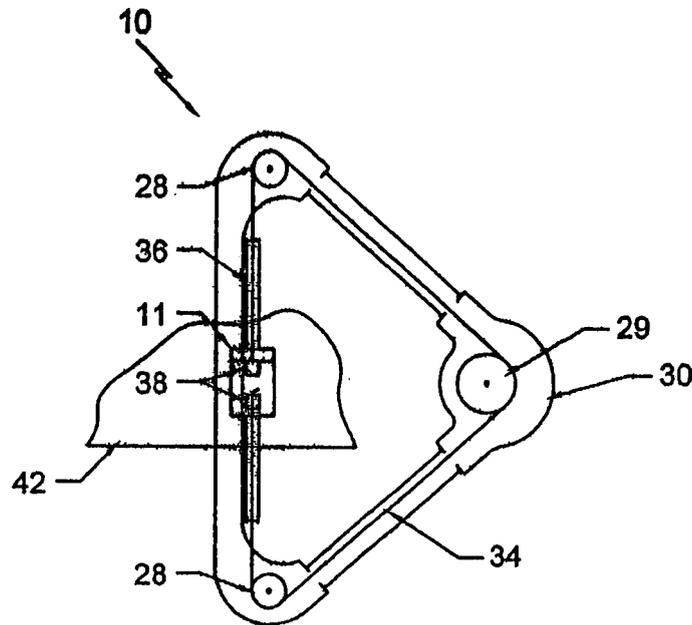
(30) Priority: **18.10.2006 ES 200602252 U**

(74) Representative: **Morgades y Manonelles, Juan Antonio**  
**C/ Rector Ubach, 37-39, bj. 2a**  
**08021 Barcelona (ES)**

(54) **Device designed to adjust window raisers**

(57) This invention refers to a device formed by a support including a clamp holding glass known in the jargon as a driver. This clamp holds the two ends of the

window lifting cable, surrounding this support is the slide rail. The window lifting device is formed by a motor the axle of which includes a pole and the aforementioned cable holding the support.



**Fig. 1**

## Description

**[0001]** This invention refers to a "DEVICE DESIGNED TO ADJUST WINDOW RAISERS" the new constructive, confirmation and design features of which achieve maximum safety and efficiency.

**[0002]** More specifically, the invention refers to a device formed by a support including a clamp holding glass known in the jargon as a driver. This clamp holds the two ends of the window lifting cable, surrounding this support is the slide rail. The window lifting device is formed by a motor the axle of which includes a pole and the aforementioned cable holding the support.

**[0003]** The window raiser in one of its possible technical configurations is including into the internal structure of the door, or in an internal panel of the same usually requiring two other poles to operate, ideally forming a triangle, with the motor on one of the vertices and with the poles guiding the cable on the other two. The ends of this cable are attached to the glass support and their clamp.

**[0004]** The described device slides along vertical guide rails held onto the internal structure of the door or onto an internal panel to assist the movement of the glass when it moves up and down within the door frame, being held by the corresponding clamps, one on each support.

**[0005]** Window lifters are already known and are applied to adjustment devices such as the French Invention Patent No. 2.836.448. Also supports with clamps to hold the glass are known such as the German Invention Patent No. 10027694.

**[0006]** The purpose of this invention is to simplify the construction of these devices, improving it by reducing the number of its parts, improving its operation and lowering manufacturing costs.

**[0007]** The requirement to immobilise the ends of the window lifter's cable originates from the pole located at the axle-motor outlet ending at the support which, including the clamp holding the glass, acts together with the pole cable adjustment. This support has a series of problems such as vibrations and noises as a consequence of the weight of the glass and the reverse movement when the user lowers the window then suddenly raises it. There is consequent inertia on the cable holding both the window raiser and the device specified and absorbing the rubbing of the shape of the glass on the rails located at the ends of the door. All of this exercises a considerable force and requires the parts in the device to be very rigid and to have a design which avoids all noise and vibration which may annoy the user when inside the car.

**[0008]** Adjusting all parts in this device requires some form of regulation, as all cables, poles and turning axles are the same always prone to small variations within allowed tolerances. If these are not absorbed by such regulation methods then noise and vibration are generated and the cable may break from its terminals or apply a force on the poles until the cable jumps out of the slots around them to guide the cable.

**[0009]** This invention proposes new means of regulation on one of the vertical faces of the support in the form of a small box, which is slightly prismatic and crossed by a rod threaded along its length except for a central section which is not threaded. Therefore the rod has a smaller diameter here to allow a sleeve to be attached covering this section and immobilising the end of the window raiser cable.

**[0010]** The aforementioned sleeve has a slightly prismatic shape, except for one of its bases which has a groove to hold this sleeve in the thinner section of the rod has an expanded notch on its central section to cover and hold the cable terminals.

**[0011]** Another advantage of this invention is that the design of the notched sleeve with an expanded central section to house the terminals has the two terminals one on top of the other instead of one, so that noise and vibrations are eliminated together with any possible play in the sleeve with the small box located inside the support. This noise and vibration are generated by the current mechanism holding the cable by its two ends. The cable changes direction and the lowering/raising direction of the glass, which with one terminal, hits against the side walls of the sleeve with the consequent generation of noise and vibration and wear of the parts.

**[0012]** This striking, caused by the changes in direction, is advantageously eliminated with two independent terminals at either end of the cable.

**[0013]** Adjusting the glass along the support or dragger is performed by turning the threaded rod until it reaches the stoppers on the end of the glass guide rails runs.

**[0014]** This turning, caused by the threads on each support, drags the sleeve up or down with the terminals inside the small box and the support or supports (in the event of being more than one). This means that the position of the dragger is changed with regard to the terminals thereby adjusting the glass in the window with or without a window frame.

**[0015]** Slots have been designed into the two entries into the small box to pass the window raiser cable through forcing the cable to follow a zig-zag path. There are semicircular open holes in the support and the vertical face to guide the aforementioned threaded rod. This rod turns around two of the small box bases.

**[0016]** Other details and features will be highlighted throughout the description. Mention is made below to the drawings attached to this report showing, for information purposes only and not limiting, the preferred configuration of the invention.

**[0017]** A detailed list of the main parts in the completed device is given below with the figures attached to this report demonstrating; (10) device, (11) support, hole (11) for the passage of the guide rail (36), right angled structure, (14) dividing walls, (15) holes, (16) drilled holes, (17) smaller side base, (18) rod, (19) threaded area of (18), (20) thinner section, (21) thread, (22) small box, (23) grooves, (24) sleeve, (25) groove, (26) slot, (27) expanded area, (28) dragging poles, (29) motor pole, (30) motor,

(31) larger bases for the small box (22), (32) smaller bases for the small box, (33) wings, (34) cable, (36) guide rail, (37) clamp, (38) terminals, (39) support base (11), (40) rear face, (41) side bases for small box (22), (42) glass and (43) slots.

**[0018]** Figure 1 is a front view of a conventional window raiser supplied with a device (10) to adjust the glass along a conventional support (11).

**[0019]** Figure 2 is a plan view of one of the supports (11). Figure 3 is a perspective view of the support (11) equipped with the specified means of adjustment contained in this invention.

**[0020]** Figure 4 is a partial perspective view of the support (11) showing the specified adjustment device contained in this invention.

**[0021]** Figure 5 is a side view of the sleeve (24) which is inserted into the inside of the small box (22), with the two terminals (38) ready in their operating position.

**[0022]** Figure 6 is an upper plan view of the sleeve (24) which is inserted into the inside of the small box (22), with the two terminals (38) ready in their operating position.

**[0023]** Figure 1 shows the conventional window raiser in which a motor (30), through its axle, drives a pole (29) called the drive pole, the side surface of which includes a groove to conduct and drive the cable (34), which passes through the other two poles (28) called the dragging poles, which drive the aforementioned cable (34) powered by the motor (30). The cable (34) is held on one of its two ends by terminals (38), which are held onto a support (11), which in turn slides along a vertical guide rail (36) held to the inner structure of the door, not shown in the figures.

**[0024]** The window raiser, together with the dragging poles (28-29), the support (11) and the motor (30) form a slightly triangular layout. The movement of the drive pole (29) causes the cable (34) surrounding this pole (29) to slide along the dragging poles (28) thereby raising and lowering the support (11) along the guide rail (36), including the support (11) and in accordance with the conventional solution is a clamp (37), to hold the glass (42) on its lower edge.

**[0025]** The side edges of the glass (42) slide along the corresponding rails, not shown in the figures, located on the vertical ends of the frame in the car door.

**[0026]** The support (11) has a means of regulating the position of the glass (42) with regard to the (34), in addition to means of immobilising the ends of the cable (34), the terminals (38). The specified invention improves the aforementioned means of regulation by using a support (11) with a new design.

**[0027]** The aforementioned support (11) is made from aluminium or similar material to the rectangular base (39) the rear face of which (40) has a right angled structure (13) to reinforce (11). This structure (13) is formed by partitioning walls (14), delineating a (13) slightly prismatic hole (15), see figure 3, which combined with the wings (33) delineated a hole (12) for the passage of the guide rail (36), and on its smaller side base (17) in (11) there

is a small box (22) open on its upper section, with entry through the (39) of the aforementioned support (11), see figures 3 and 4.

**[0028]** The small box (22) has slightly prismatic shape without an upper base for the larger side bases (31) and smaller bases (32), see figure 4.

**[0029]** The base (17) of the support (11), as shown in figures 3 and 4, has been designed with grooves (23), see figure 3, to guide the threaded rod (18) in the area (19), except for its central section, the thinner area (20), with a smaller diameter with smooth cylindrical sides. The rod (18) and its thread (19) turns on the threads (21) in the side base (17) of the support (11), with the rod (18) passing through the small box (22), equipped (22) with notches (26), see figures 5 and 6, near to the smaller bases (32), between the side bases (41) of the small box (22) housing the sleeve (24), see figures 5 and 6. The special configuration of this is described below. This allows it to be housed in the thinner section (20) of the rod (18).

**[0030]** The sleeve (24) with a slightly prismatic shape, see figures 5 and 6, has a groove on one of its bases (25) which is bent to house the thinner section (20) of the rod (18), and a notch (26) on its contiguous base with an expanded area (27) forming a prismatic hole housing the two terminals (38) of the cable (34), one on top of the other with each (38) on one end of the cable (34).

**[0031]** The cable (34) surrounding the drive pole (29) continues with the dragging pole (28), passing through the notches (43) near to the smaller bases (32) of the small box (22) with their ends finishing at the aforementioned terminals (38). When the motor (30) is activated by the user, the drive pole turns (29) and pulls the cable (34) by the terminals (38), forcing the support (11) to slide along the guide rail (36), and as a consequence to raise or lower the glass (42) in the car door's window frame.

**[0032]** The glass (42) in its frame, or even where there is no frame, is adjusted by the end of the run located on the glass guides (42), so that the glass is aligned with the upper ends of the rod (18) located at the stopper on the ends of the run. At this time and in this position, the position of the glass (42) is adjusted by threading (18) on the threads (21) so that the supports (11) are raised or lowered. In this way the horizontal position of the glass (42) may be changed in addition to adjusting the upper section of the glass frame (42) where this exists.

**[0033]** Having sufficiently described this invention using the attached figures, it is easy to appreciate that any modification may be made to the details where these are deemed to be necessary and whenever these changes do not alter the essential nature of the invention summarised by the following claims

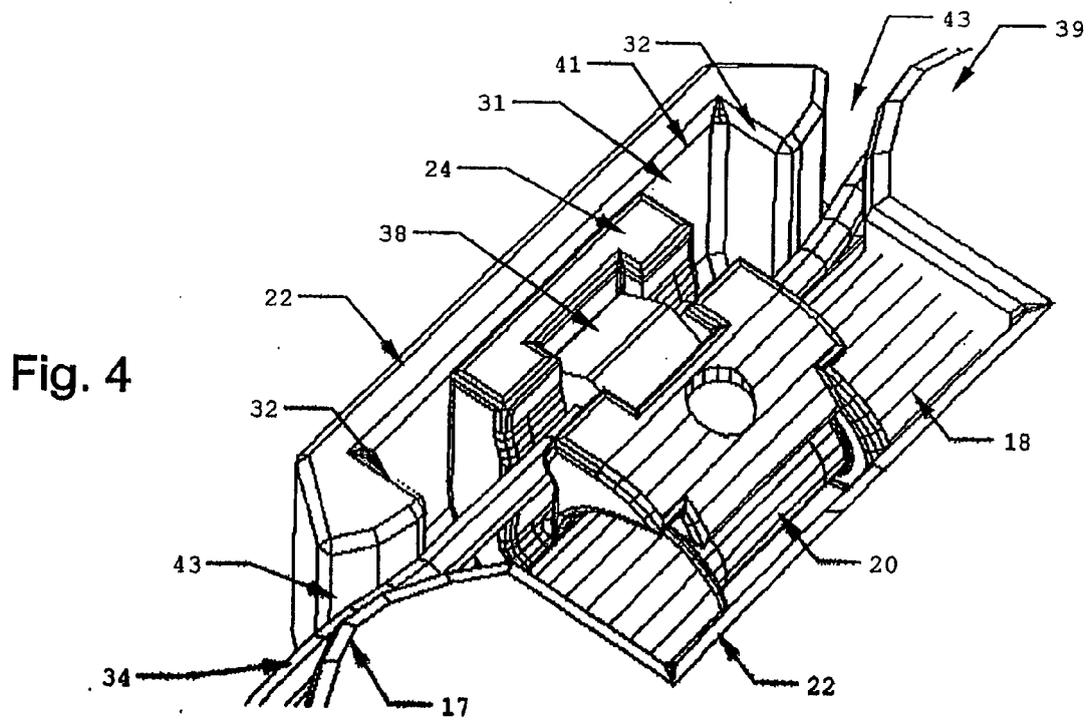
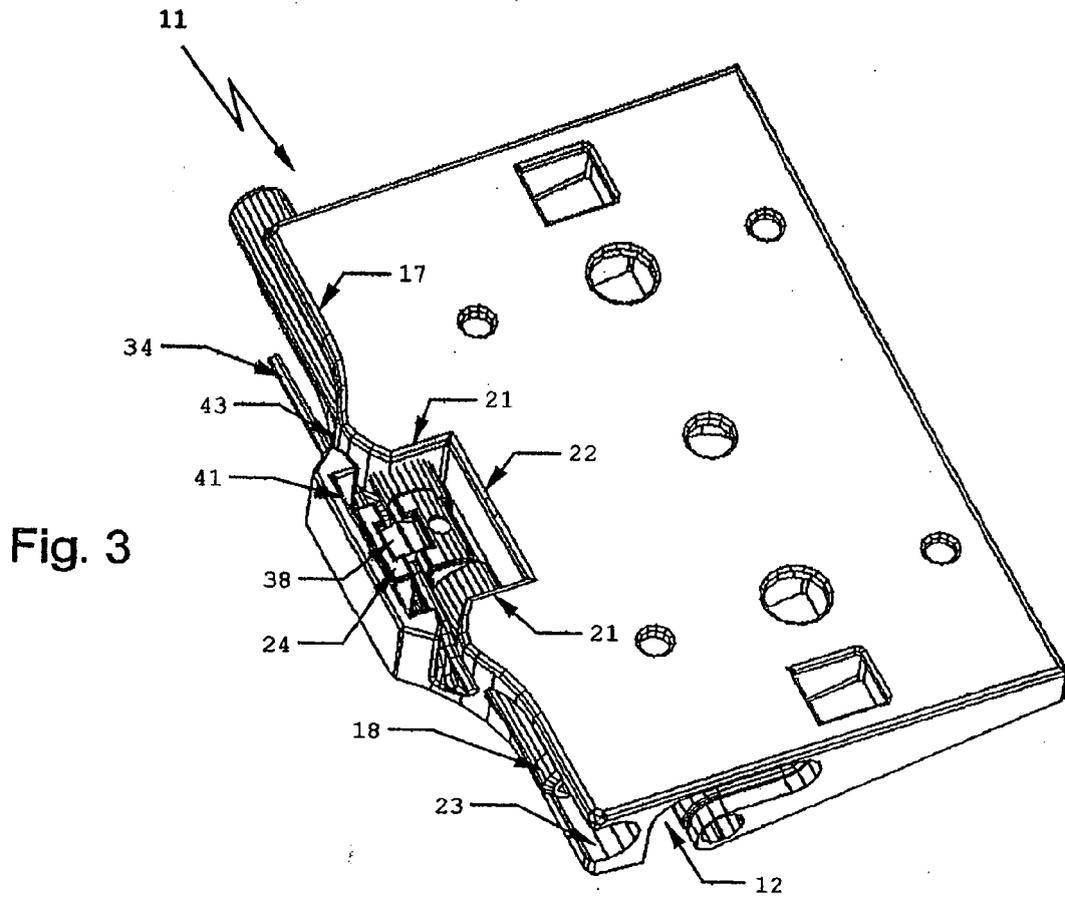
## 55 Claims

1. - "DEVICE DESIGNED TO ADJUST WINDOW RAISERS" formed by a motor (30) the axle of which

drives a pole (29) called the drive pole, the side surface of which has a groove to conduct and drive a cable (34) which passes through other poles (28) called dragging poles which drive the aforementioned cable (34) driven by the motor (30), by terminals (38) held at the end of the cable (34) held onto the support (11), which is an aluminium part or material similar to the rectangular base (39), the rear face of which (40) has a right angled structure (13) to reinforce (11), this structure (13) is formed by partitioning walls (14), delineating (13) a slightly prismatic hole (15) which combined with the wings (33) delineate a hole to pass through the slide rail (36), and on its smaller side base (17) there is a small box (22) open on its upper section to allow the entry of the base (39) of the aforementioned support (11), with, located inside the small box (22), the window adjustment mechanism, **characterised by** the fact that the base (17) of the support (11) has been designed to include grooves (23) to guide a rod (18) which is completely threaded apart from the central, thinner section (20), the side cylindrical surface of which is smooth, so that the rod (18) and its thread (19) turns on the threads (21) in the side base (17), with this rod (18) passing through the small box (22), equipped with notches (43) near to the smaller bases (32), between the larger bases (31) of the smaller box (22) housing the sleeve (24), the special configuration of which houses the thinner section (20) of the rod (18).

2. - "DEVICE DESIGNED TO ADJUST WINDOW RAISERS" according to the first claim, **characterised by** the fact that the slightly prismatic sleeve (24) has a groove in one of its bases (25) and a notch (26) in the contiguous base with a middle expanded area (27) in (22) designed to house two terminals (38), one on top of the other at each end of the cable (34), the cable (34) surrounding the drive pole (29) continues with the conducting poles (28) and their ends finish in the aforementioned terminals (38), when the motor (30) activated by the user forces the drive pole (29) to turn the cable through the terminal (38) forcing the support (11) to slide along the rail (36) and as a consequence to raise or lower the glass (42) .
3. - "DEVICE DESIGNED TO ADJUST WINDOW RAISERS" according to the first claim, **characterised by** the fact that adjusting the glass (42) with regard to the support (11) is carried out by turning the threaded rod (18) when the upper ends of the rod (18) reach the end of the run located on the glass guide rail (42), which the rod (18) turns on the threads (21) in the side base (17), dragging the sleeve (24) up or down with the terminals (38), thereby changing the position of the glass (42) with regard to the support (11).





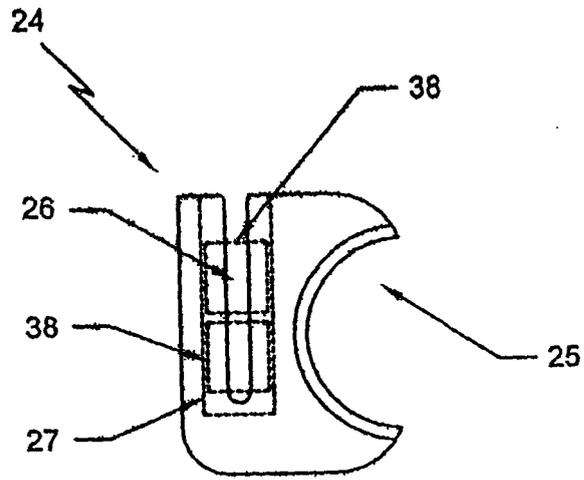


Fig. 5

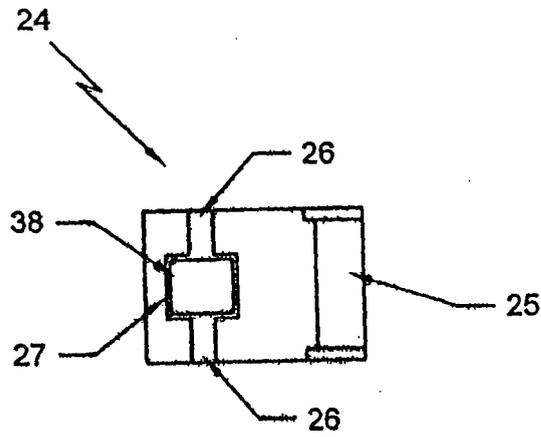


Fig. 6



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 196 46 940 A1 (BAYERISCHE MOTOREN WERKE AG [DE]) 5 February 1998 (1998-02-05) * the whole document *	1,3	INV. E05F11/48
Y	* figure 1 *	2	
X	EP 1 400 650 A (BROSE FAHRZEUGTEILE [DE]) 24 March 2004 (2004-03-24) * abstract * * figures 1,2A,2B * * paragraphs [0023], [0026] *	1,3	
Y	WO 2006/027792 A (IFB AUTOMOTIVE PRIVATE LTD [IN]; NAG BIJON [IN]; CHANDRASEKHAR VAIDYAN) 16 March 2006 (2006-03-16) * figures 3,4 * * page 5, lines 28-31 *	2	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E05F
Place of search		Date of completion of the search	Examiner
The Hague		10 January 2008	Schnedler, Marlon
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			

2  
EPO FORM 1503 03 02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 38 0254

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 The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

10-01-2008

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 19646940	A1	05-02-1998	NONE	
-----				
EP 1400650	A	24-03-2004	NONE	
-----				
WO 2006027792	A	16-03-2006	CN 101031700 A	05-09-2007
-----				

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- FR 2836448 [0005]
- DE 10027694 [0005]