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(54) **Window regulator**

Fensterheber

Lève-vitre

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(73) Proprietor: **ATOMA ROLTRA S.p.A.**
86077 Pozzilli (IS) (IT)

(72) Inventor: **Bergesio, Giuseppe**
I-12042 Bra (IT)

(74) Representative: **Prato, Roberto et al**
Studio Torta S.r.l.,
Via Viotti, 9
10121 Torino (IT)

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Description

[0001] The present invention relates to a window regulator, preferably for vehicles, as known from FR-A-2 207 520.

[0002] More specifically, the present invention relates to a window regulator according to the preamble of independent claim 1 of the type comprising a channel for use with a slide connected to a sliding window with which it runs along the channel, and a slide activating device; the activating device comprising a cable connected to the slide and extending along at least part of a loop path; and provision being made for an actuator assembly connected to the cable for moving it axially along said path, and at least one sheath portion for a corresponding portion of the cable and extending between fixed points of said path.

[0003] The channel normally comprises a main body made of sheet metal and bracketed to a frame normally consisting of a portion of the vehicle door. Assembly of such channels is therefore relatively time-consuming, due to the additional assembly components involved.

[0004] FR-A-2 207 520 discloses a window regulator channel which comprises a main body, in turn, comprising an elongated plate and two terminal integral deformed portions which can be fitted to the support frame. In particular, each terminal portion comprises a connection plate which is face to a relative terminal portion of the elongate plate, is spaced away from the terminal portion itself, and presents a connection hole. Assembly of such window regulator channel is quite difficult since the connection holes are disposed at the back of the elongated plate with respect the slide.

[0005] It is an object of the present invention to provide a perfected window regulator which is relatively straightforward and hence cheap to produce and assemble.

[0006] According to the present invention, there is provided a window regulator as defined in claim 1.

[0007] A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a schematic side view of a window regulator according to the present invention;
Figure 2 shows a side view of the channel of Figure 1 ;
Figure 3 shows a larger-scale, partially sectioned view of part of the Figure 2 channel;
Figure 4 shows the same view as in Figure 3 of a variation of the Figure 3 channel.

[0008] Number 1 in Figure 1 indicates a window regulator for two-way regulation of a window 2 (shown partly by the dotted line) of a vehicle (not shown).

[0009] Device 1 comprises a vertical channel 3; and a slide 4 connected in known and sliding manner to the curved-section main body 12 of channel 3, and in turn fitted with and supporting window 2 in known manner by means of an element 18. Slide 4 is moved both ways along channel 3 by a known cable activating device 5 comprising a cable 6 connected to and extending through slide 4 along a closed loop path; and an actuator assembly 8 in turn comprising a reversible electric motor 11 and connected to cable 6 so as to move it along said path. Cable 6 thus runs along body 12, and comes out at both ends through respective end bodies 13 for guiding cable 6 and which act as stops for respective ends of two sheaths 19 in which cable 6 is housed and guided along the loop path. The other ends of sheaths 19 are housed inside respective end portions 21 of a fixed body 20 of actuator assembly 8.

[0010] Main body 12 is fitted directly to portions 22 (Figures 2 and 3) of a frame 23 conveniently consisting of the vehicle door frame. More specifically, body 12, which is conveniently made of sheet metal with a U section, presents, close to the ends of bottom wall 35, two integral portions 24 which are cut along three sides and bent towards portions 22 of frame 23. Portions 24 present assembly holes 28 fitted with respective screws 25 in turn fitted with nuts 26 beneath portions 22 of frame 23. Screws 25 are conveniently welded to portions 24 to reduce the number of loose parts and simplify assembly.

[0011] As shown in Figure 4, body 12 is alternatively fitted to portions 22 of frame 23 using a screw 27 secured using the same nut 26, and presenting a truncated-cone-shaped head housed and conveniently welded inside a complementary truncated-cone-shaped seat 28' conveniently drawn in an end portion 24' of bottom wall 35 of body 12.

[0012] The advantages of the window regulator according to the present invention will be clear from the foregoing description. Fitting main body 12 directly to frame 23, with no need for inserting intermediate brackets, provides for reducing cost by eliminating additional assembly parts, as well as for simplifying and speeding up assembly.

[0013] Clearly, changes may be made to the embodiments described and illustrated herein without, however, departing from the scope of the present invention. For example, screws 25, 27 need not necessarily be welded to respective end portions 24, 24' of body 12; nuts 26 may be welded to portions 22 of frame 23; and actuator assembly 8 may comprise, in known manner, a handle as opposed to electric motor 11.

Claims

1. A window regulator (1) for two-way regulation of a window (2) sliding relative to a frame (23) comprising a channel (3) having a main body (12) supporting and guiding a slide (4) provided with means (18) for supporting and fitting a window to said slide (4); said main body (12) presenting at least one integral

deformed portion (24;24') for fitting the channel (3) to a frame (23), characterized in that said integral portion (24) consists of a portion partially cut out of said main body (12) and bent to stand away therefrom.

2. A window regulator as claimed in Claim 1, characterized in that said integral portion (24) is supported and fitted directly on to said frame (23).

3. A window regulator as claimed in Claim 1 or 2, characterized in that said integral portion (24) presents at least one seat (28;28') for the passage of at least one element (25;27) for connecting it to said frame (23).

4. A window regulator as claimed in Claim 3, characterized in that said seat (28') consists in a drawn portion of said integral portion (24) for housing the head of said connecting element (27).

5. A window regulator as claimed in Claim 3 or 4, characterized in that said connecting element (25; 27) is fixed to said integral portion (24) of said main body (12).

6. A window regulator as claimed in one of the foregoing Claims, characterized in that said main body (12) is made of sheet of metal.

7. A window regulator as claimed in one of the foregoing Claims, characterized in that it comprises a pair of said integral portions (24) for fitment to said frame (23), located close to the ends of said body (12).

Patentansprüche

1. Fensterheber (1) mit einem Zwei-Wege-Antrieb für ein Fenster (2), das relativ zu einem Rahmen (23) gleitet, der eine Schiene (3) mit einem Hauptkörper (12) umfaßt, der einen Schlitten (4) trägt und führt, der mit einer Einrichtung (18) zum Halten und Anbringen eines Fensters an dem Schlitten (4) versehen ist; wobei der Hauptkörper (12) zumindest einen integralen deformierten Abschnitt (24; 24') zum Anbringen der Schiene (3) an einem Rahmen (23) aufweist, **dadurch gekennzeichnet, daß** der integrale Abschnitt (24) aus einem Abschnitt besteht, der teilweise aus dem Hauptkörper (12) geschnitten und gebogen ist, um von diesem wegzustehen.

2. Fensterheber nach Anspruch 1, **dadurch gekennzeichnet, daß** der integrale Abschnitt (24) direkt an dem Rahmen (23) gelagert und angebracht ist.

3. Fensterheber nach einem der Ansprüche 1 oder 2, **dadurch gekennzeichnet, daß** der integrale Abschnitt (24) zumindest einen Sitz (28; 28') als Durchgang für zumindest ein Element (25; 27) aufweist, um es mit dem Rahmen (23) zu verbinden.

4. Fensterheber nach Anspruch 3, **dadurch gekennzeichnet, daß** der Sitz (28') aus einem gezogenen Abschnitt des integralen Abschnitts (24) besteht, um den Kopf des Verbindungselementes (27) unterzubringen.

5. Fensterheber nach einem der Ansprüche 3 oder 4, **dadurch gekennzeichnet, daß** das Verbindungselement (25; 27) an dem integralen Abschnitt (24) des Hauptkörpers (12) befestigt ist.

6. Fensterheber nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, daß** der Hauptkörper (12) aus Blech hergestellt ist.

7. Fensterheber nach einem der vorangegangenen Ansprüche, **dadurch gekennzeichnet, daß** er ein Paar der integralen Abschnitte (24) zum Anbringen an dem Rahmen aufweist, die in der Nähe der Enden des Körpers (12) angeordnet sind.

Revendications

1. Lève-vitre (1) destiné à piloter à double sens une vitre (2) coulissant par rapport à un châssis (23) comprenant un profilé (3) présentant un corps principal (12) supportant et guidant un coulisseau (4) formé avec des moyens (18) destinés à supporter et monter une vitre audit coulisseau (4) ; ledit corps principal (12) présentant au moins une partie d'un seul tenant déformée (24 ; 24') destinée à monter le profilé (3) à un châssis (23), caractérisé en ce que ladite partie d'un seul tenant (24) consiste en une partie partiellement découpée hors dudit corps principal (12) et courbée afin d'en être éloignée.

2. Lève-vitre selon la revendication 1, caractérisé en ce que l'on fait supporter et l'on monte ladite partie d'un seul tenant (24) directement sur ledit châssis (23).

3. Lève-vitre selon la revendication 1 ou 2, caractérisé en ce que ladite partie d'un seul tenant (24) présente au moins une assise (28 ; 28') destinée au passage d'au moins un élément (25 ; 27) afin de le relier audit châssis (23).

4. Lève-vitre selon la revendication 3, caractérisé en ce que ladite assise (28') consiste en une partie insérée de ladite partie d'un seul tenant (24) afin de loger la tête dudit élément de liaison (27).

5. Lève-vitre selon la revendication 3 ou 4, caractérisé

en ce que l'on bloque ledit élément de liaison (25 ; 27) à ladite partie d'un seul tenant (24) dudit corps principal (12).

6. Lève-vitre selon l'une des revendications précédentes, caractérisé en ce que l'on réalise ledit corps principal (12) en feuille de métal.

7. Lève-vitre selon l'une des revendications précédentes, caractérisé en ce qu'il comprend une paire desdites parties d'un seul tenant (24) afin de les monter audit châssis (23), situées à proximité des extrémités dudit corps (12).

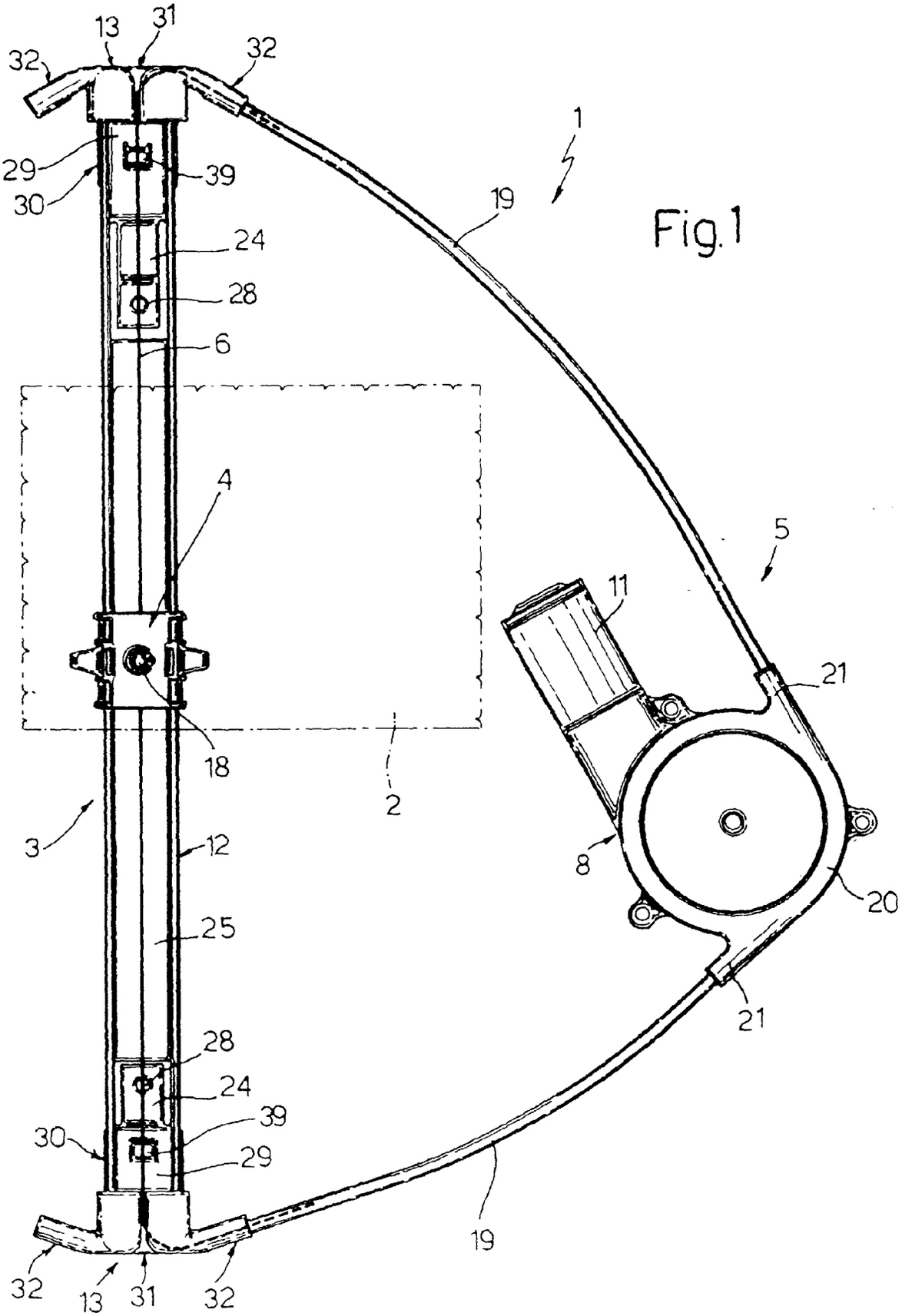
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Fig.1

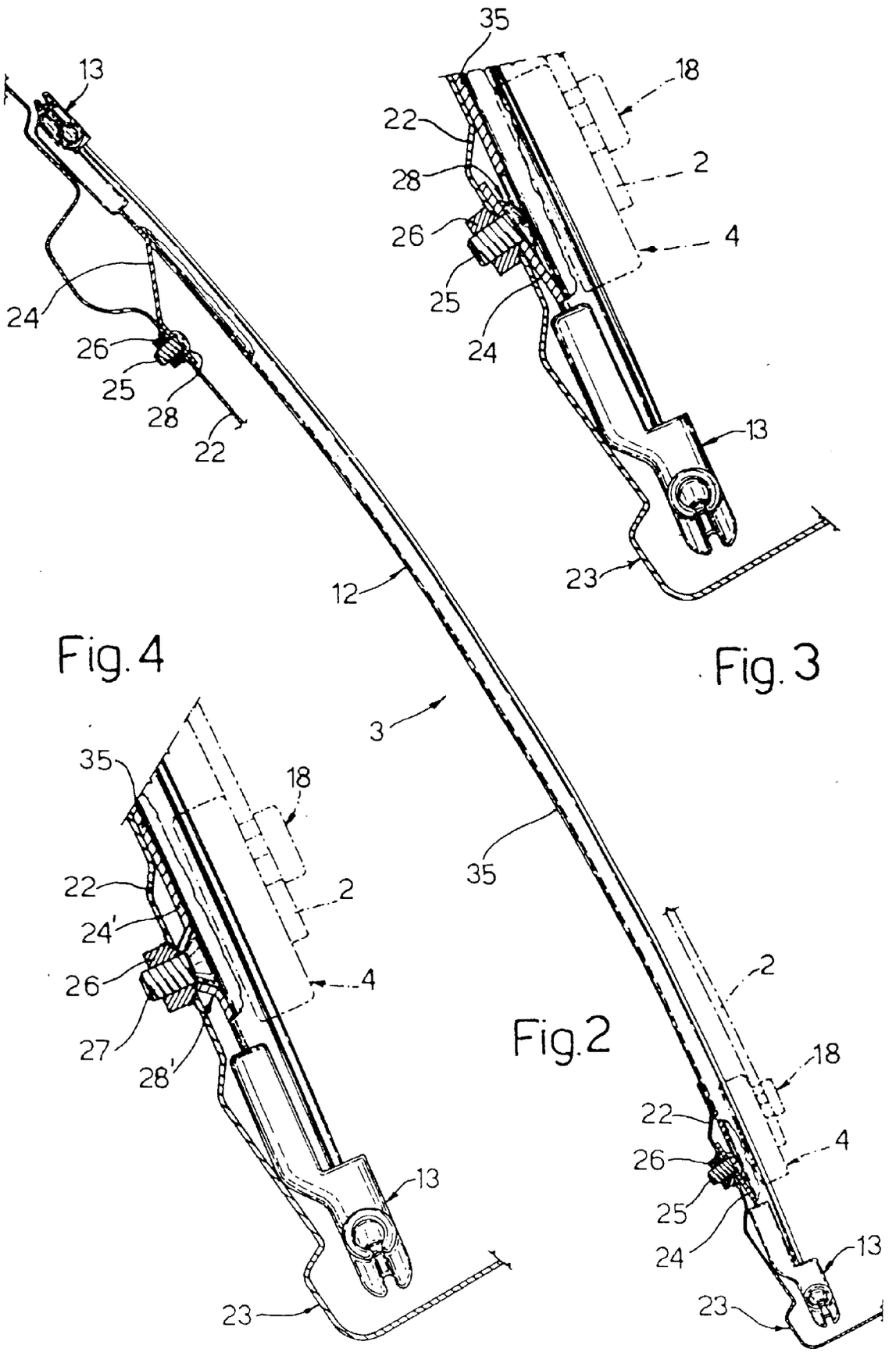

Fig. 4

Fig. 3

Fig. 2