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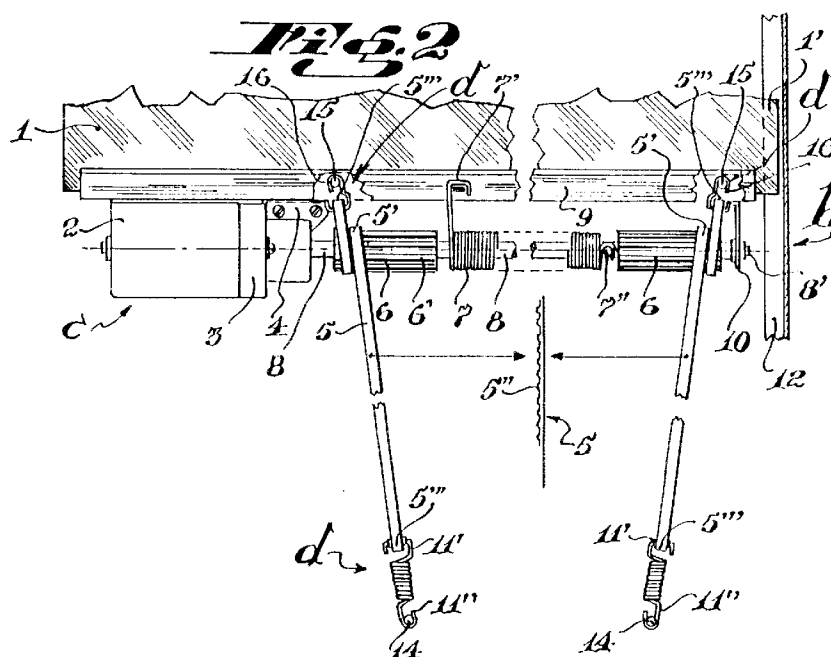
18.02.1998 Bulletin 1998/08(51) Int Cl.⁶: **E05F 15/16, E05F 11/38**(21) Application number: **97500138.9**(22) Date of filing: **14.08.1997**

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NL PT SE**(72) Inventor: **Completa, Vinicio****1004 Buenos Aires (AR)**(30) Priority: **15.08.1996 AR 10400896**(74) Representative: **Garcia Cabrerizo, Francisco****OFICINA GARCIA CABRERIZO S.L.****Vitruvio 23****28006 Madrid (ES)**(71) Applicant: **Completa, Vinicio****1004 Buenos Aires (AR)**(54) **Electrical window-lift device, for automobile windows in general**

(57) 1) ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; of the type which the glass (1), being mobile, is slidingly channeled in the opposed grooved guides (12) of a frame (b') that, defining an opening of variable enabling by the own glass (1), is part of a panel (13), generally member of a door (b) of the vehicle (a); and the mentioned glass (1) is mounted on a frame (9) that, through means of transmission of movement, is operable by an electric motoreducer (C), component of a circuit that includes a switching means; said glass (1) being moveable in the same guides (12) between two limit points that correspond to

the closing and opening positions, respectively, as well as to other intermediate ones; this device is characterized because the motoreducer (C) that counts with fixation means (4) to said glass (1), is provided of a nonskid body (6) in whose periphery (6'), at least, a flexible and lengthened band (5) has nonskid embrace the one which, subject by its ends (5'') to the panel (13), constitutes the track of displacement of said nonskid body (6) that is the means transmitter of the movement, transformed from gyrating in the axis (8) of the motoreducer (C), in rectilinear-alternative movement of the glass (1) among its guides (12).



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Description

I - BACKGROUND OF THE INVENTION

The present utility model consists in an **electrical window-lift device, for automobile windows in general**, and its object is to supply a device that allows the elimination of electrical and mechanical complex systems that those vehicles usually have.

A great amount of window-lift devices are known, among which, the most usual are the mechanical ones that end in an axle that going through the walls of the panel of the door, mounts a handle of command.

As an alternative to these mechanisms there are different types of devices that could be driven by means of switches located in the panel of command of the automobile, in the door or on both places simultaneously, in such a way that they can be driven by each passenger, by the driver or by any of them respectively.

Among these devices there are those based on a pneumatic circuit that includes a deposit of compressed air, as well as cylinders in each door, inside which a piston moves from which a driving arm is projected. Hydraulic devices that include a servo and pipes finished in cylinders endowed with arms pushers are also known.

In almost all the cases an electric control is included, as well as equally electric motors that work on the corresponding compressor units and that are worked by means of switches or pulsators.

As much pneumatic devices as the hydraulic ones that are known end in arms that work mechanisms of elevation and descent of the glasses of the windows. Among these mechanisms, they are the compounds for ribs intertwined in form of "X", until those integrated by groups of wheels and jagged bars, as well as the ones composed by pinions connected with jagged tracks.

Electromechanical devices are also known, that include a central motor moving unit provided by means of transmission of movement that, crossing the doors, they enter toward the interior of the panel where they are connected with the mechanism of elevation of the glass.

Most of the well-known devices are compound by a quantity of central means, common to all the doors, from which leave different conduits that, crossing the doors of the vehicle, they end connected to the mechanism corresponding to the glass of each window. This does not only give place to the presence of more complex facilities, but rather it is translated in bigger production costs originated in the protection means and insurance of these facilities.

These problems are resolved by means of the present electric window-lift device. It is a motorreducer fixed to the inferior part of the glass of the window whose axis has nonskid bodies. The periphery of these bodies is embraced by lengthened flexible bands whose ends are anchored in the panel of the door. In this way, when working the switch of the circuit that feeds the motorreducer, the gyratory movement of the axis and of the non-

skid body becomes a rectilinear movement of the glass in their sliding grooved guides. This set is supplemented by a tubular compensator spring that, threaded in the axis and anchored to it, is also anchored in the frame of the glass, so that it is loaded of tension during the descent and it cooperates during the ascent of the mentioned glass.

With this device the complex devices that cross the doors, already mentioned, are eliminated, as well as the mechanisms of each door based on metallic parts such as jagged wheels, pinions, tracks, ribs, etc. In this way a much more light, economic device is obtained and of very efficient operation.

II - Illustrations

For better clarity and understanding of the object of the utility model, it is illustrated with several figures in which it has been represented in one of its favorite ways of embodiment, everything simply as an illustrative example, not limiting:

Figure 1 is a lateral view of the vehicle of application, with a longitudinal section in the door that allows to appreciate the location of the electric window-lift device.

Figure 2 is a lateral view of the present window-lift device that allows to observe the disposition of its different component parts. The motorreducer fixed to the frame of the glass is clearly distinguished, as well as the nonskid bodies that, mounted in their axis, are embraced by the lengthened bands. In the ends of the bands the hook means are seen, while between both nonskid bodies the tubular compensator spring is appreciated.

Figure 3^a is a front view of a traverse section of the door with the glass in its inferior position.

Figure 3^b is a view like the previous one but with the glass in superior position.

In the different figures, the same reference numbers indicate same or corresponding parts, and the groups of several elements have been pointed out with the letters.

Listing of the main references:

- (a) vehicle.
- (b) door of (a).
- (b') frame of the window of (b).
- (c) motorreducer,
- (d) hooking means,
- (1) glass.
- (1') lateral borders of the glass (1).
- (2) electric motor.
- (3) reducer.
- (4) fixing means of (c) to (1).
- (5) lengthened band.
- (5') complete embrace or embracing spire.
- (5'') jagged internal face of (5).

(5'') extreme opened in the form of an eyelet that can be hooked.
 (6) nonskid body.
 (6') jagged periphery of the body (6).
 (7) tubular compensator spring.
 (7') anchorage of (7) in (9).
 (7'') anchorage of (7) in (8).
 (8) motor axis of (c).
 (8') extreme of (8).
 (9) frame of glass (1).
 (10) support of axis (8).
 (11) tensile spring.
 (11') insert hook.
 (11'') anchorage hook.
 (12) grooved guide of the glass (1).
 (13) panel of the door (b).
 (14) inferior anchorages.
 (15) superior anchorages.
 (16) rigid hooks of insertion-anchorage.

III - Main Object

To the specified ends the electric window-lift device, for windows of vehicles in general, is of the type in which the glass (1), being mobile, is slidingly channeled in the opposed grooved guides (12) of a frame (b') that, defining an opening of variable enabling by the own glass (1), is part of a panel (13), generally member of a door (b) of the vehicle (a); and the mentioned glass (1) is mounted on a frame (9) that, through means of transmission of movement, is operable by an electric motoreducer (c), component of a circuit that includes a switching means; said glass (1) being moveable in the same guides (12) between two limit points that correspond to the closing and opening positions, respectively, as well as to other intermediate ones; this device is characterized because the motoreducer (c) that counts with fixation means (4) to said glass (1), is provided of a nonskid body (6) in whose periphery (6'), at least, a flexible and lengthened band (5) has nonskid embrace the one which, subject by its ends (5'') to the panel (13), constitutes the track of displacement of said nonskid body (6) that is the means transmitter of the movement, transformed from gyrating in the axis (8) of the motoreducer (c), in rectilinear-alternative movement of the glass (1) among its guides (12).

IV -DESCRIPTION

The device of the present utility model consists on an electric window-lift, for windows of vehicles in general.

In general terms it is an applicable device to the door (b) of a vehicle (a). Said door (b) includes a window frame (b') whose opening is enabled variably by a glass (1) to which a motoreducer (c) is fixed. The latter (c) is provided of a nonskid body (6) that is embraced by, at least, a lengthened band (5) anchored (14) and (15) in

the panel (13) of the door (b), although in the embodiment that is described, the device includes two nonskid bodies (6) and two lengthened bands (5).

More particularly, the door (b) of the vehicle (a) each, conform grooved guides (12) that extend from frame (b') of the window until panel (13), in the inferior part of the mentioned door (b). In these grooved guides (12) the lateral borders (1') of the glass (1) are slidingly fixed.

On the other hand the glass (1) has prepared in its inferior part a frame (9) to which the motoreducer is linked (c) through fixing means (4). The motoreducer (c) is an unit composed by aii electric motor and a reducer that has for exit a motor axis (8). This axis (8) is prolonged in a parallel way to the frame (9) until finishing in an end (8') rotatively mounted in a support (10) that, while on one hand it conforms a bearing for the one mentioned end (8'), on the other hand it is fixed to the frame (9) of the glass (1).

The axis (8) is provided of two nonskid bodies (6) with drum form whose peripheries (6') are jagged. In these peripheries (6'), each, have their nonskid embrace the internal faces (5''), also jagged, of lengthened and flexible bands(5). These lengthened bands (5) cross sidelong to the motor axis (8) and each one of them (5) is rolled helically on their nonskid body (6), to which it confers a complete embrace conforming a spire embracing (5').

Starting from the mentioned embrace or spire embracing (5'), each band (5) is projected in an inferior tract and another superior, both finished in respective ends opened in the form of an eyelet that call be hooked (5''). These ends (5'') can be hooked to hooking means (d) that link these lengthened bands (5) with the panel (13) of the door (b).

In this way, in the inferior part, the hooking means (d) are constituted by tensile springs (11), each one (11) of which is endowed with an insert hook (11') [in the end open in the form of an eyelet (5'')] and with another hook (11'') dedicated to the respective inferior anchorage (14) of the panel (13).

In the superior part of the panel (13), the hooking means (d) of the lengthened bands (5) are constituted by rigid hooks of insert-anchorage (16) that link these bands (5) with the superior anchorages (15) of the panel (13).

On the motor axis (8), in all intermediate disposition between both nonskid bodies (6), a tubular compensator spring (7) is coaxially mounted. This spring (7) that is threaded in the axis (8), has an end that conforms an anchorage (7'') in the axis (8), while the other end finishes in another anchorage (7') in the frame (9) of the glass (1).

55 The set works in the following way:

Being the glass (1) at the top of its upward career, it closes the opening defined by the frame (b') of the win-

dow of the door (b). If under those conditions the switch of the circuit of the motoreducer is worked (c), the motor axis (8) of the latter (c) is animated of gyrating movement, the same as the nonskid bodies (6) that said axis (8) has solidarily mounted.

So much the periphery (6') of the nonskid bodies (6) as the internal faces (5") of the flexible lengthened bands (5) each, define surfaces of nonskid opposed support. This way each lengthened band (5), anchored (14) and (15) in the panel (13), constitutes the track of displacement of their corresponding nonskid body (6). It is so that this body (6) descends accompanied by the spire embracing (5') that the band (5) goes conforming in its run.

As the motoreducer (c) is linked to the glass (1) through fixation means (4) that links it with the frame (9), the nonskid bodies (6) are movement transmitting means that, being revolving in the motor axis (8), becomes rectilinear movement alternately upward-descending of the glass (1), among the grooved guides (12) of the door (b).

Together with this, the tubular compensator spring (7) is stretched by the descent of the frame (9) [in which one of its ends has anchorage (7")], being loaded of tension in the sense of the descending career of the glass (1). This way it reaches the maximum tension in the inferior position of the glass (1). Therefore when beginning the upward career of the mentioned glass (1) the tubular compensator spring (7) behaves as cooperating with the work of the motoreducer (c).

It is certain that being the present utility model taken to the practice, modifications will be able to be introduced concerning certain construction and form details, without implying to move away from the fundamental principles that are considered clearly in the claim clauses that continue next:

Claims

1. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; of the type which the glass, being mobile, is slidingly channeled in the opposed grooved guides of a frame that, defining an opening of variable enabling by the own glass, is part of a panel, generally member of a door of the vehicle; and the mentioned glass is mounted on a frame that, through means of transmission of movement, is operable by an electric motoreducer, component of a circuit that includes a switching means; said glass being moveable in the same guides between two limit points that correspond to the closing and opening positions, respectively, as well as to other intermediate ones; this device is characterized because the motoreducer that counts with fixation means to said glass, is provided of a nonskid body in whose periphery, at least, a flexible and lengthened band has nonskid embrace

the one which, subject by its ends to the panel, constitutes the track of displacement of said nonskid body that is the means transmitter of the movement, transformed from gyrating in the axis of the motoreducer, in rectilinear-alternative movement of the glass among its guides.

2. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; in accordance with claim 1; wherein the motoreducer that has fixation means to the glass, is provided of a nonskid body conforming a drum in whose periphery has nonskid embrace the internal faces of two flexible and lengthened bands which, provided in their ends of hooking means to the fixed panel, constitute a track of displacement of said nonskid body, that is the movement transmitting means, transformed from gyrating in the axis of the motoreducer, to rectilinear-alternative movement of the glass among its guides.

3. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; in accordance with claim 1; wherein so much the nonskid body as, at least, the internal face of the flexible contactable band define, each, surfaces of nonskid opposed support.

4. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; in accordance with claim 1; wherein the flexible band is a jagged belt that gears with an equally mounted jagged wheel on the axis of the motor, and to which it confers a complete embrace; and starting from that engaging embrace with the mentioned jagged wheel, the jagged belt projects each tracts whose ends finish with hooking means to the fixed panel.

5. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; in accordance with claim 1; wherein the flexible band, crossing the motor axis sidelong, is rolled helically with a single spire on their nonskid body to which it confers a complete embrace; and starting from this embrace, the mentioned band is projected with a superior tract and another inferior, with its extremes that can be hooked to the fixed panel.

6. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; in accordance with claim 1; wherein the ends of each flexible band finish in anchorage buttonholes to hooking means to the fixed panel.

7. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; in accordance with claim 6, wherein, at least one of the hooking means is constituted by a tensile spring of the

band whose ends define an insert hook in the buttonhole proximal to the same flexible band, and an anchorage to the area proximal to the supporting structure.

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8. ELECTRIC WINDOW-LIFT DEVICE, FOR WINDOWS OF VEHICLES IN GENERAL; in accordance with claim 1; wherein in the same motor axis, one of the ends of a tubular compensator spring is fixed, which other end is fixable to the frame of the glass; being this spring of chargeable tension in the sense of the descending career of said glass.

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Fig. 1

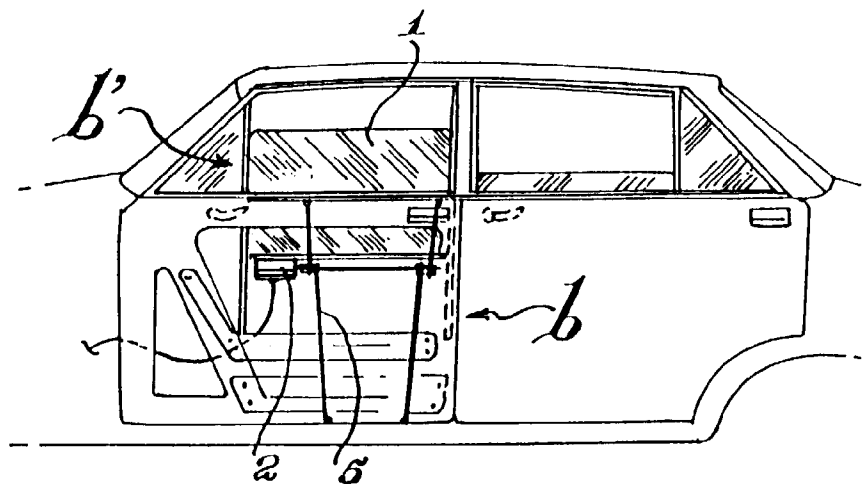


Fig. 2

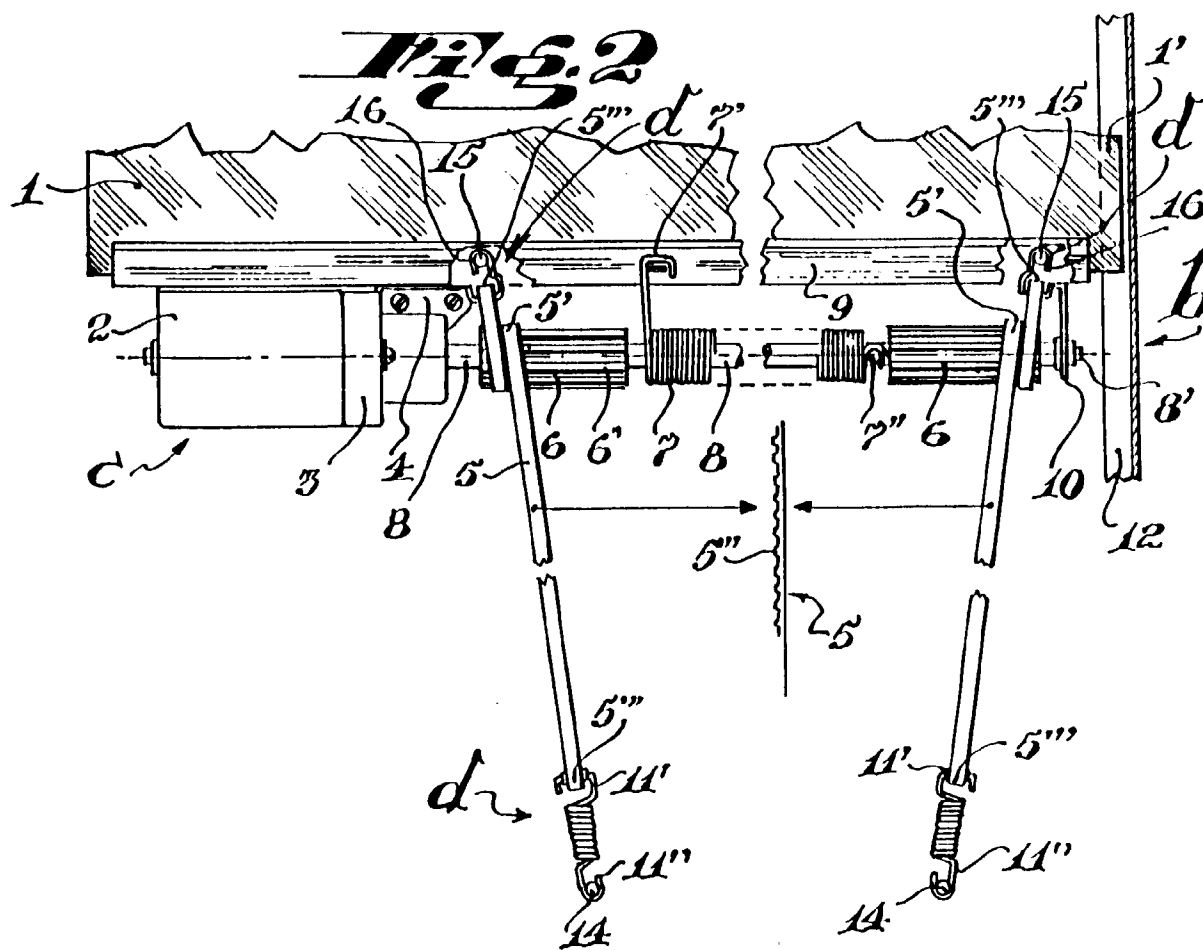


Fig. 4

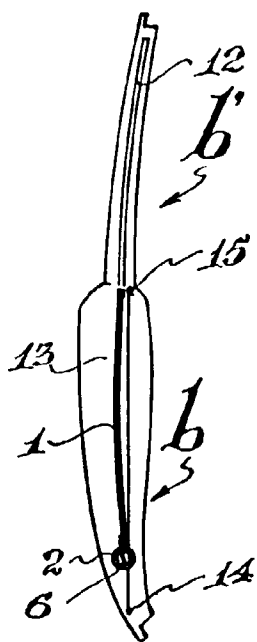
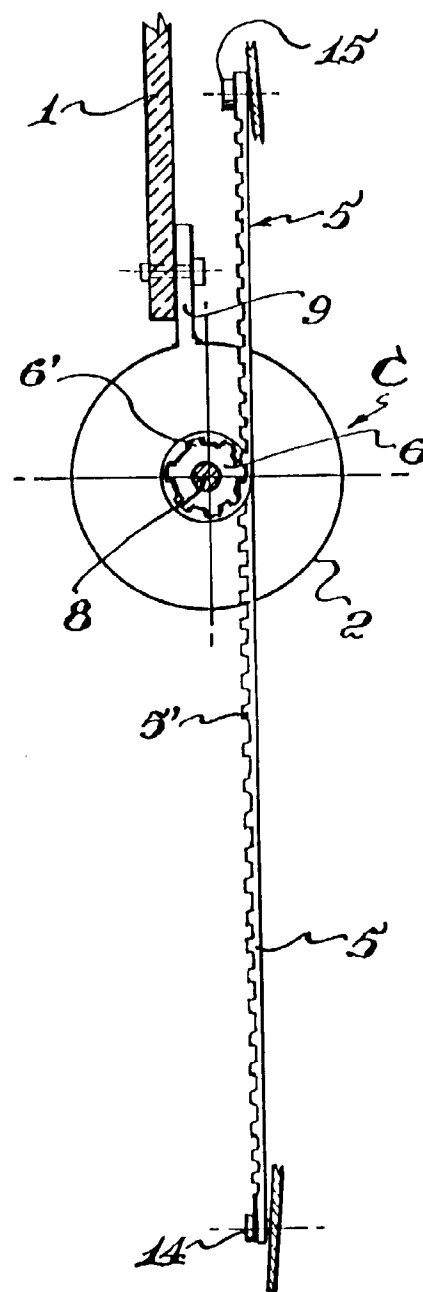


Fig. 3a

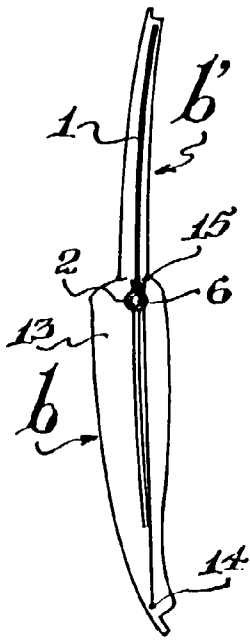


Fig. 3b