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WINDOW REGULATOR

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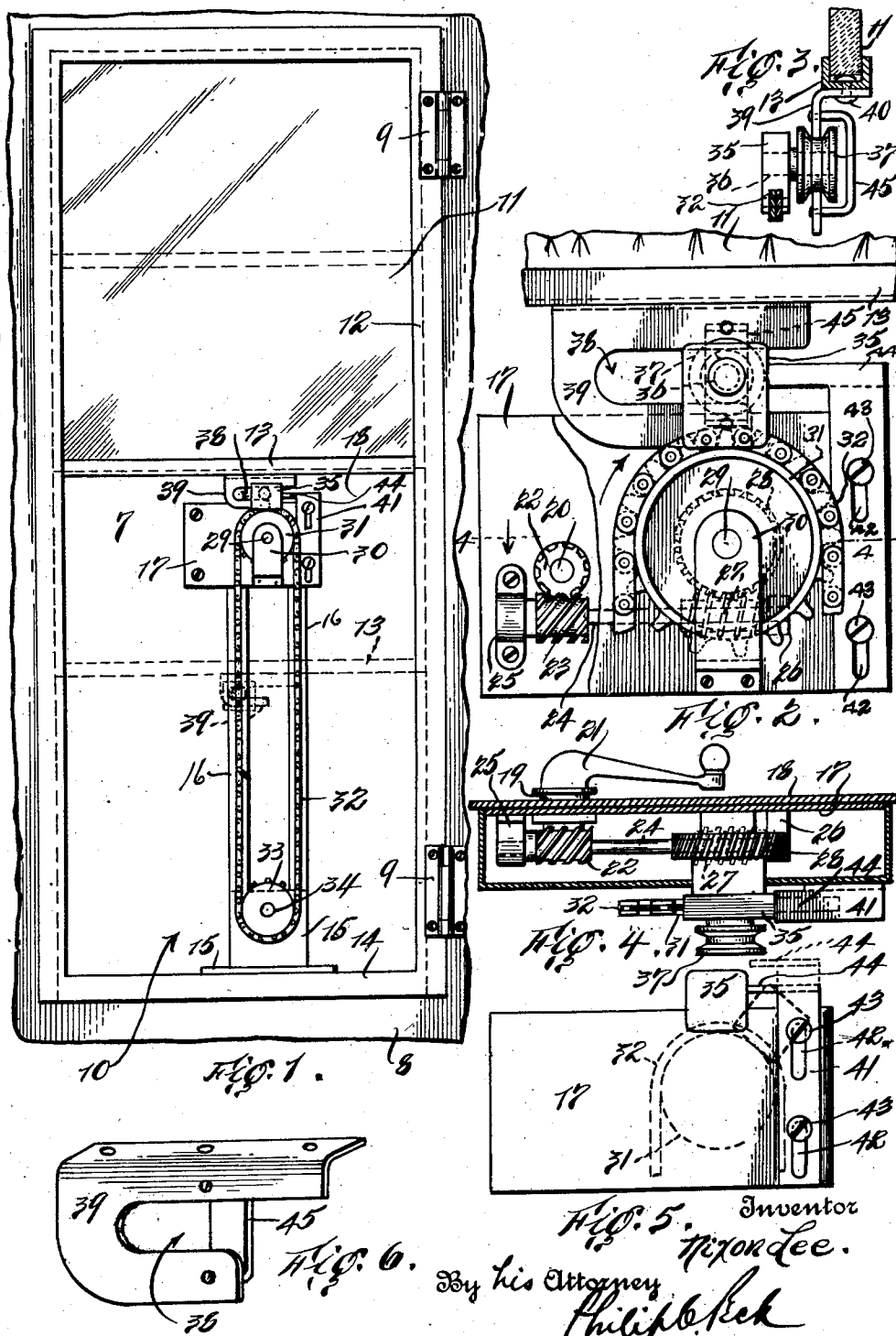


FIG. 5. Inventor  
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## UNITED STATES PATENT OFFICE.

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## WINDOW REGULATOR.

Application filed January 3, 1922. Serial No. 526,701.

My invention relates to window-regulators having particular reference to that type of window used in automobile construction and embodied in automobile doors such as is shown and described in my pending application for patent Serial No. 396,726 filed July 16, 1920, although this particular invention is not restricted to such use, but may be applied to any window operating mechanism whether located in a door or otherwise.

The chief objects of my invention are, among other things, to provide a simple but efficient connecting device between the window supporting carrier for raising and lowering the window and the lower window sash, whereby the latter may be readily disconnected and reconnected to the carrier proper which is preferably securely affixed to, and contained within, the lower section or well of the door, the upper section or panel of the door having the sheet of glass maintained therein when the window is raised. Should the glass affixed in the movable window sash become broken, it becomes necessary to remove the sash bodily from the door frame, and to do so the supporting carrier should remain undisturbed in the containing well in the door frame. The aim of my improved device is to provide a simple and effective locking and unlocking mechanism by which the window sash may be easily detached from, and attached to, the window-operating mechanism without necessitating the removal of the latter from the door-frame along with the sash, and which may likewise be readily secured and held to the window sash through the rotation of the carrier mechanism proper.

With the above and other objects in view, my invention comprises the novel construction, combination and arrangement of parts to be hereinafter specifically described and thereafter particularly pointed out in the appended claims.

I attain the foregoing advantageous results by the window-regulator illustrated in the accompanying drawings in which—

Fig. 1 is a diagrammatic vertical sectional view of a preferred form of my improved window-regulator as embodied, for example, in an automobile door, having a vertically slidable upper glass section, the view being taken from the interior, the window-operating mechanism being shown in the lower panel;

Fig. 2 is an enlarged fragmentary detail

view showing a portion of the window frame having my improvement attached thereto, the cover for the gear casing being broken away;

Fig. 3 is a detail end view of the jaw bracket secured to the lower window sash together with its coacting roller and carrier chain block;

Fig. 4 is a sectional detail view, the section being taken on the line 4—4 of Fig. 2 looking in the direction of the arrow;

Fig. 5 is a diagrammatic view showing the chain carrier stop in normal position in full lines, and in dotted lines the position of this stop to permit the chain block and roller to be moved out of the jaw bracket; and

Fig. 6 is a detail perspective view of the jaw bracket attached to the window sash.

Similar numerals refer to similar parts throughout the several figures.

Referring to the drawings, the door 7 is as usually constructed for an automobile body 8 of the limousine type, the door 7 being carried on the body 8 by hinges 9 as shown in Figure 1. The door 7 comprises a hollow lower section or well 10 within which the mechanism for raising and lowering the window is permanently secured and contained. The upper door section comprises the usual window glass 11 sliding up and down in the side frames 12 of the door 7, and having the transverse lower sash 13 secured to the lower edge of the glass 11 as shown in Fig. 3, whereby the window is raised and lowered by the mechanism hereinafter to be described.

At the bottom of the well 10 on the lower frame 14 of the door 7 I secure in any suitable manner the base 15 from which the upright standards 16 extend vertically, the upper ends of which are affixed to the rectangular plate 17 secured to the inner panel 18 of the lower section or well 10 by screws as shown in Fig. 1. The plate 17 carries the bushing 19 extending through the panel 18 within which bushing is journaled the stub-shaft 20 to which the hand-crank 21 is attached on the inner side of the door in any suitable manner. Secured to the other end of the shaft 20 is the spiral gear 22 enmeshing with the spiral gear 23 mounted on the cross-shaft 24 journaled in the brackets 25 and 26 affixed to the inner side of the plate 17, as shown in Fig. 2. The right-hand end of the shaft 24 carries the worm 27 which engages with the worm gear 28 mounted on the stub-shaft 29 journaled in the plate 17

and also in the upright bracket 30 affixed to the plate 17 by screws or other means as shown in Fig. 2. Also mounted on the shaft 29 is the upper sprocket 31 around which  
 5 passes the endless loop sprocket chain 32 which also passes around, and engages with, the lower sprocket 33 carried by the shaft 34 journaled in the base 15 as shown in Fig. 1.

Mounted above the pitch line of the  
 10 sprocket chain 32 and secured thereto is the chain block 35 which carries the transverse pin 36 on which the roller 37 is mounted to engage in, and coact with, the laterally extending slot or opening 38 formed in the  
 15 jaw-bracket 39 which is secured to the lower edge of the window sash 13 of the window 11 by screws 40 as shown in Fig. 3. On the right-hand side of the plate 17 is the carrier stop 41 having vertical slots 42 formed there-  
 20 in to contain the screws 43 by which the stop 41 is slidably mounted on the plate 17. The upper end of the stop 41 is formed with the horizontally-disposed lug 44 projecting to the left in Figs. 1 and 5 to engage with  
 25 the block 35 as shown in Figs. 2 and 4 to hold the roller 37 within the slot 38 of the jaw-bracket 39 as shown to operatively connect this bracket secured to the window sash 11 as shown. The plate 45 shown in Fig.  
 30 3 prevents the jaw-bracket 39 from spreading.

When it becomes advantageous or necessary to detach the window sash 11 from the carrier chain 32 without disturbing the  
 35 mechanism for raising and lowering the window, the stop 41 is raised either by hand or any suitable device to the dotted line position shown in Fig. 5 which movement lifts the lug 44 not only out of engagement with  
 40 the chain block 35, but also out of the orbit of this block when the chain 32 is rotated by the hand-crank 21 to carry the block 35 to the dotted line position shown in Fig. 5; this chain and block rotating to the right  
 45 simultaneously causes the roller 37 to pass out of the open slot 38 formed in the jaw-bracket 39. When the roller 37 is swung free from the bracket 39, the window sash 13 is completely disconnected from the win-  
 50 dow-operating mechanism, permanently secured within the well 10, and the entire sash and glass may be readily removed from the door 7 for repairs to the glass 11. After the window-sash is replaced in the door

frame 12, the sash 13 may be easily re-con- 55  
 nected with the carrier chain 32 by reversing the rotation of the latter to force the roller 37 into the slot 38 in the jaw-bracket 39 as shown in Fig. 2; after which the chain stop 41 is lowered to its full line position 60  
 so that the lug 44 engages with the side of the chain block 35 to hold the roller 37 in firm engagement with the bracket 39, as shown in Figs. 2 and 4.

It will be understood that the improved 65  
 window-closure device herein shown and described may be modified and changed in its details without departing from the principle and scope of my invention as particularly pointed out and defined in the claims. 70

I claim as my invention:

1. In a window-regulator, a movable window-sash, a bracket having a slotted opening secured to said sash, a flexible endless loop carrier to raise and lower the sash, 75  
 means comprising a block having a laterally extending pivoted roller both mounted above the pitch line of said carrier to engage said bracket opening, and a stop slid-  
 80 able in the plane of said block to maintain said roller in said slotted bracket.

2. In a window-regulator, a movable window-sash, a bracket having a slotted opening secured to said sash, a flexible endless loop carrier to raise and lower the sash, 85  
 means comprising a block having a laterally extending pivoted roller both mounted above the pitch line of said carrier to engage said bracket opening, and a stop slidable in the plane of said block to maintain said roller  
 90 in said slotted bracket in one position and in another position to allow said roller to pass out of said bracket opening only upon the movement of the carrier.

3. In a window-regulator, a movable win- 95  
 dow-sash, a bracket having a laterally-extended slotted opening secured to said sash, a flexible endless loop carrier to raise and lower the sash, anti-frictional means mounted above the pitch line of the carrier 100  
 and transversely-extending therefrom in the plane of said bracket opening to detachably engage the slotted bracket when said carrier is travelling in a circular path, and a stop slidable in the plane of said carrier 105  
 and coacting therewith to hold said anti-frictional means within said slotted bracket.

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