June 6, 1939. L. R. RHEIN ET AL 2,161,199

WINDOW REGULATOR FOR A SWINGING WINDOW

Filed June 7, 1937 3 Sheets-Sheet 1

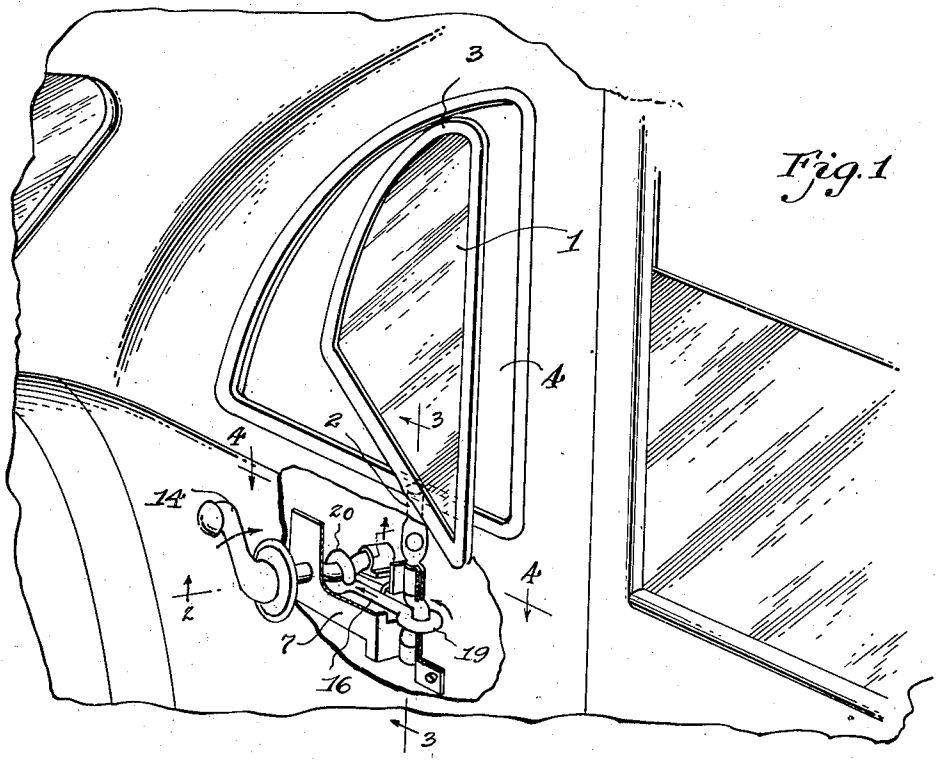


Fig. 1

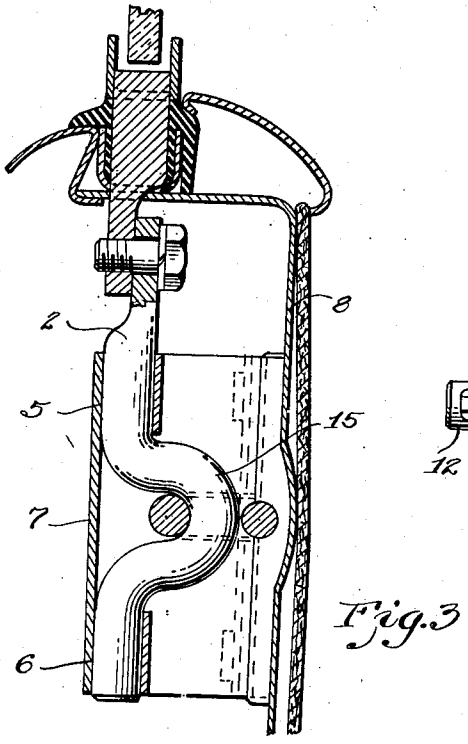


Fig. 3

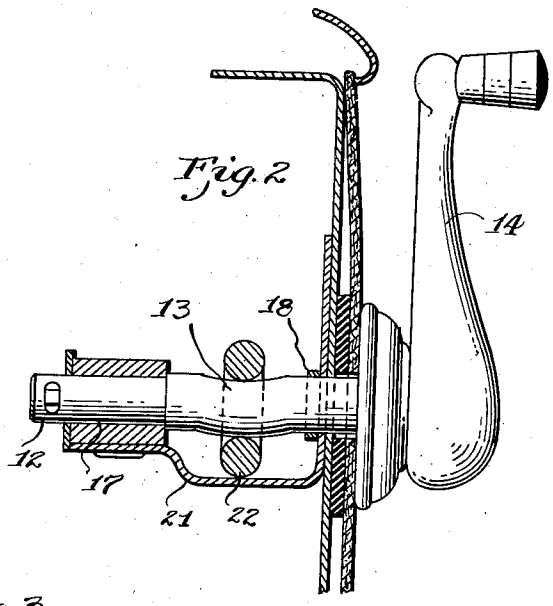


Fig. 2

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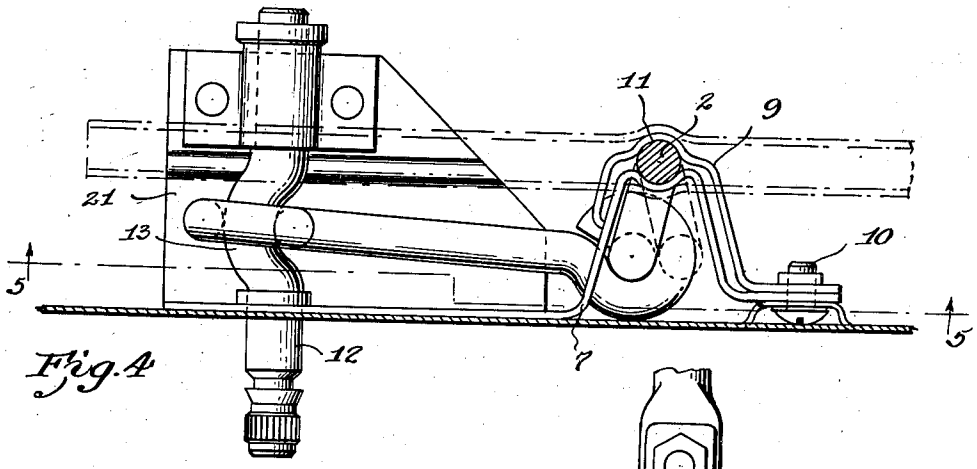


Fig. 4

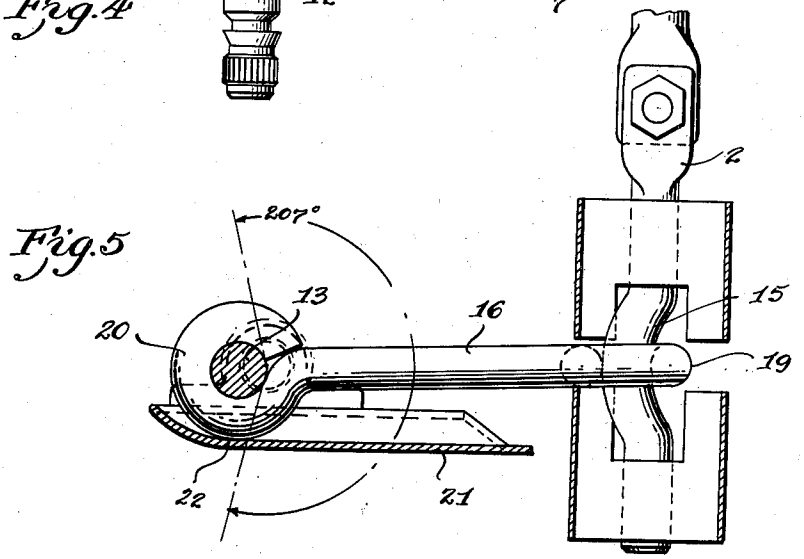


Fig. 5

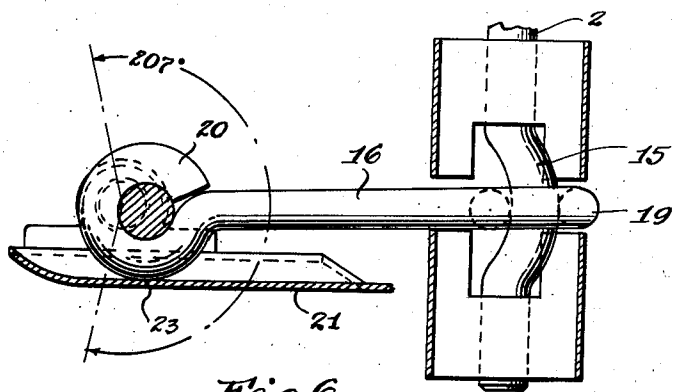


Fig. 6

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WINDOW REGULATOR FOR A SWINGING WINDOW

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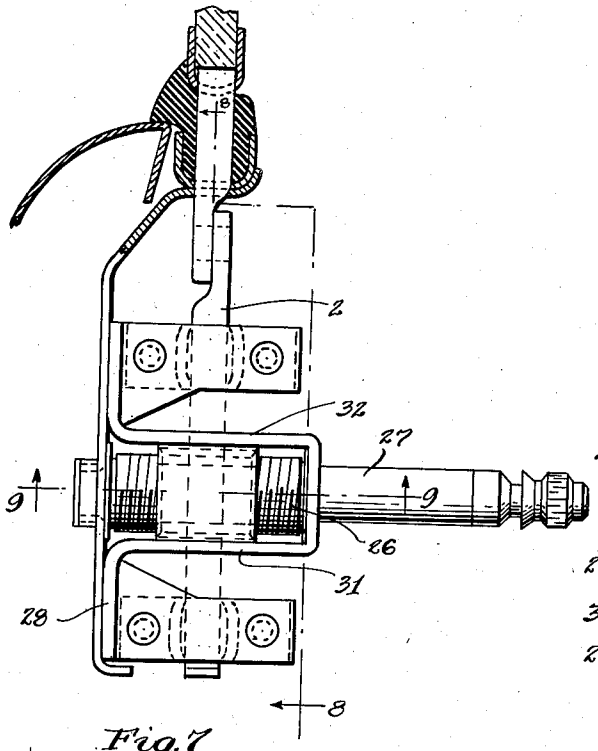


Fig. 7

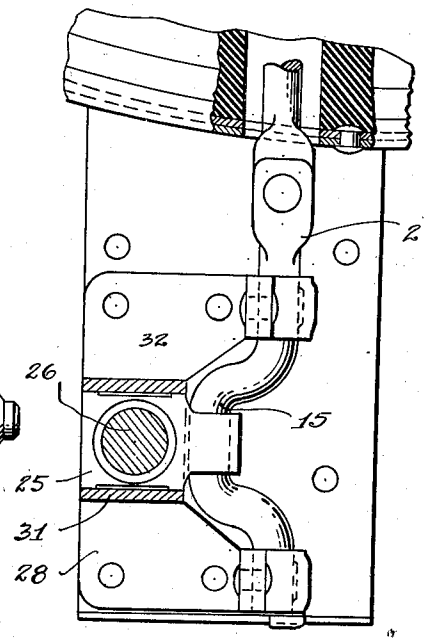


Fig. 8

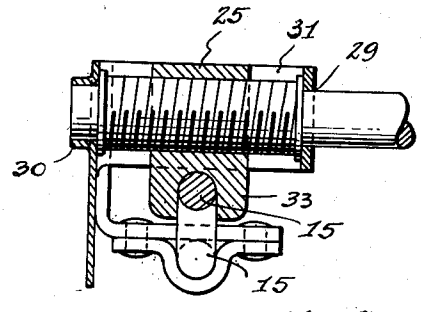


Fig. 9

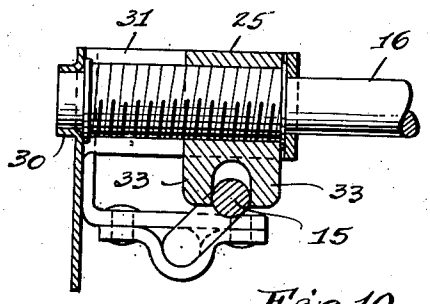


Fig. 10

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2,161,199

WINDOW REGULATOR FOR A SWINGING WINDOW

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Application June 7, 1937, Serial No. 146,724

2 Claims. (Cl. 268—119)

This invention relates to a window regulator for a swinging window and more particularly to a swinging ventilating window for an automobile.

It is the object of this invention to produce a regulator for a swinging window which is simple in form, cheap to manufacture, positive in operation, and which will serve not only to swing the window panel about its pivot but also to lock it against being swung open when in closed position by force applied to the panel.

In the drawings:

Fig. 1 shows an inside perspective view partly broken away of the rear quarter of an automobile body and the regulator applied to the rear quarter swinging window.

Fig. 2 is a section along the line 2—2 of Fig. 1.

Fig. 3 is a section along the line 3—3 of Fig. 1.

Fig. 4 is a section along the line 4—4 of Fig. 1 but showing the swinging panel fully closed.

Fig. 5 is a vertical section through the regulator along the line 5—5 of Fig. 4 showing the position of the regulator when the swinging window is closed.

Fig. 6 is a view similar to that shown in Fig. 5 but with the swinging panel fully open.

Fig. 7 is a view similar to Fig. 3 showing a modified form of the invention.

Fig. 8 is a section along the line 8—8 of Fig. 7.

Figs. 9 and 10 are sections along the line 9—9 respectively showing the position of the regulator when the window is closed and in one of its open positions.

Referring more particularly to the drawings there is shown a ventilating window for the rear quarter of an automobile body. This ventilating window comprises a panel 1 pivotally mounted in the window opening generally designated 4 upon the vertical shaft 2 and the upper pivot 3. The shaft 2 is journaled in the bearings 5 and 6 (Fig. 3) carried by the regulator frame 7. The regulator frame 7 is welded or otherwise fixed to the lock board 8. Thus, the window panel 1 is arranged to swing in the window opening 4 about a vertical axis intermediate its front and rear edges.

A friction clamp 9 is secured at one end to the regulator frame by the bolt 10 and the other end of the clamp 9 frictionally engages the shaft 2 as at 11 and thus frictionally holds the window panel 1 in any position to which it is swung.

The mechanism for swinging the window 1 consists primarily of the spindle 12 having an offset portion intermediate its ends to form the crank 13, a regulator handle 14 for turning the spindle 12 and crank 13, an offset in the shaft 2 which forms the crank 15, and a connecting rod 16 which interconnects the cranks 13 and 15.

The spindle 12 is provided with a two bearing support on the regulator plate 7 as at 17 and 18. The connecting rod 16 is provided at the one end with a bearing in the form of a loop 19 which encircles and rotatably engages the crank 15 and at the other end with a bearing in the form of a loop 20 which encircles and rotatably engages the crank 13. Since the spindle 12 rotates in a horizontal plane and the shaft 2 in a vertical plane, therefore the bearing 19 is positioned in a horizontal plane and the bearing 20 is positioned in a plane perpendicular to the plane of the bearing 19.

The operation of this structure is as follows: As shown in Fig. 5 the swinging window 1 is closed. In such position the crank 13 is slightly past dead center and the bearing 20 abuts the base 21 of the regulator plate 7 as at 22. Thus, the window panel 1 cannot be swung open by force applied to the said panel because the base 21 of the regulator plate 7 prevents further counter-clockwise movement of the crank 13 and any force transmitted through the window and connecting rod 16 to the crank 13, which is over-center, will only tend to bind the bearing 20 more tightly between the base 21 of the plate 7 and the shaft 2.

To open the window the torque must be applied through the crank 14, spindle 12 and crank 13 in a clockwise direction as viewed in Fig. 5. Torque thus applied to the crank 13 will rotate the same from the position shown in Fig. 5 clockwise 207° to the position shown in Fig. 6. The travel of crank 13 through 207° will rotate crank 15 and window panel 1 through approximately 29° to the open position shown in Fig. 1. At this time the bearing 20 again abuts the base 21 of the plate 7 as at 23. The swinging window 1 is now in full open position and is held in this position as well as in any intermediate position by the friction clamp 11.

In the modified form of the invention the crank 15 is turned by a traveling nut 25 threaded on the screw 26. The screw 26 is fixed on a spindle 27 operated by a regulator handle such as 14. The spindle 27 is journaled in a regulator plate 28 as at 29 and 30. The regulator plate 28 is provided with opposed track portions 31 and 32 between which the traveling nut 25 slides and is guided thereby as it travels along the screw 26. The nut 25 is provided with the furcations 33 between which the crank 15 fits. The screw 26 and nut 25 provides an irreversible drive for

swinging the window panel 1 to open and closed positions and any intermediate position.

As shown in Figs. 7, 8 and 9, the window panel 1 is closed. To open the same the spindle 27 is turned by means of a crank 14 which causes the nut 25 to travel along the screw 26 from the position shown in Fig. 9 to that shown in Fig. 10. As the nut travels from the position shown in Fig. 9 to that shown in Fig. 10 it rotates the crank 15 clockwise, as viewed in these figures, thus causing the window to be swung open. Reverse rotation of the spindle 27 causes the nut to travel from the position shown in Fig. 10 to that shown in Fig. 9 thus swinging the crank counter-clockwise and thereby swinging the panel 1 to closed position.

We claim:

1. In combination with a window panel and frame therefor swingable about an upright axis, a shaft depending from the said frame and rotatable about an upright axis, the said shaft having an integral offset crank portion, a driving spindle having an integral offset crank portion and rotatable about a horizontal axis, bearing supports for said shaft and spindle immediately adjacent each end of said crank portions, a connecting rod interconnecting the said cranks for transmitting the torque from the driving spindle to the crank shaft for swinging the said window panel, the said driving spindle crank being rotatable through a predetermined range to over-center position in the swinging of the panel to closed position, and a stop for arresting further rotation of the driving spindle crank in the same direction whereby the said drive is irreversible and the swinging window panel is locked in closed position against opening by the application of torque to the window panel.

2. In combination with a window panel and frame therefor swingable about an upright axis, a shaft depending from the said frame and rotatable about an upright axis, the said shaft having an offset crank portion, a driving spindle having an offset crank portion and rotatable about a horizontal axis, a connecting rod having a bearing at each end, the said bearings being positioned in perpendicular planes, the one bearing encircling the driving spindle crank and the other encircling the vertical crank shaft in driving relation therewith, the said driving spindle crank being rotatable through a predetermined range to over-center position in the swinging of the panel to closed position, and a stop against which the connecting rod bearing which encircles said driving spindle crank abuts for arresting further rotation of the driving spindle crank in the same direction whereby the said drive is irreversible and the swinging window panel is locked in closed position against opening by the application of torque to the window panel.

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