

July 19, 1932.

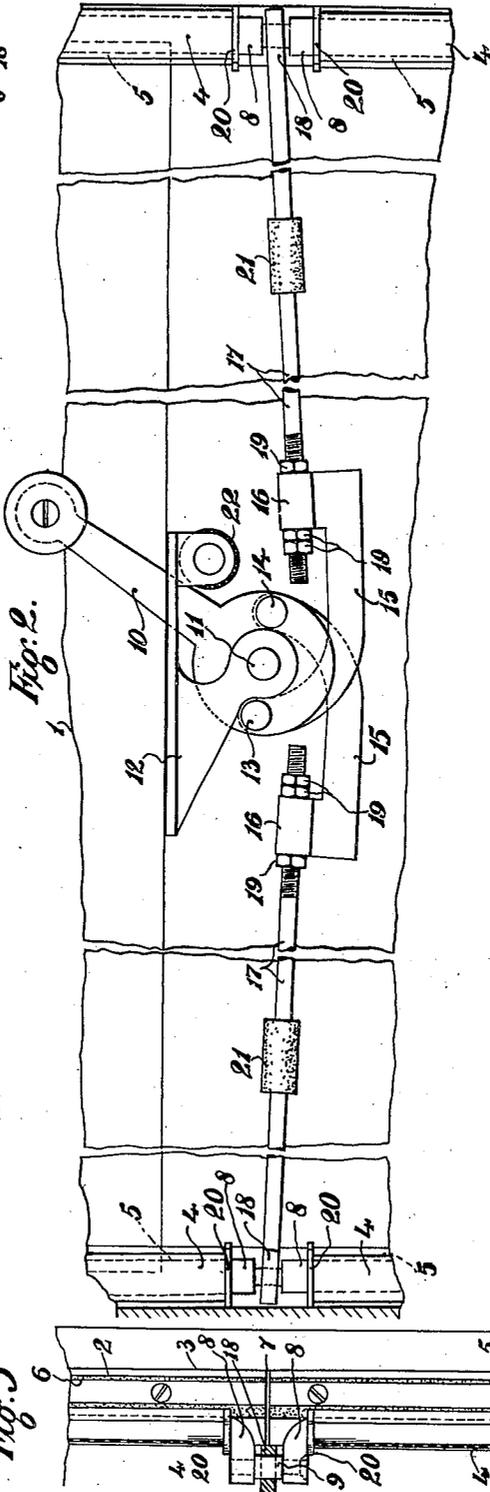
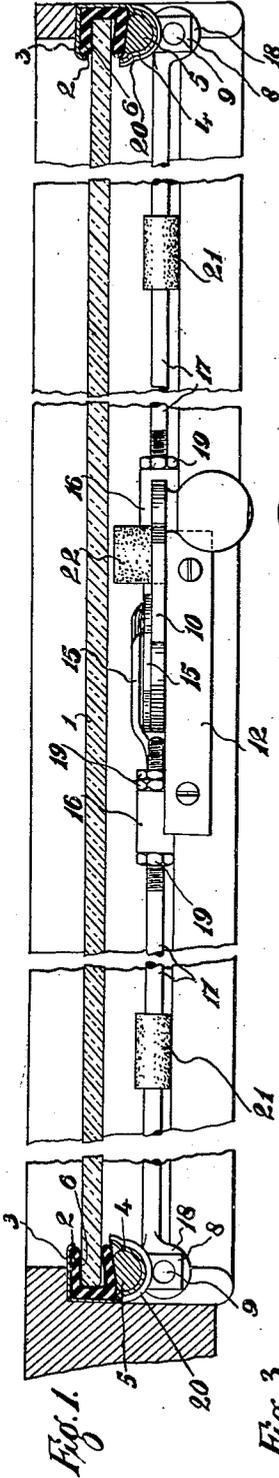
F. J. STUART

1,867,776

SLIDING WINDOW

Filed March 5, 1931

2 Sheets-Sheet 1



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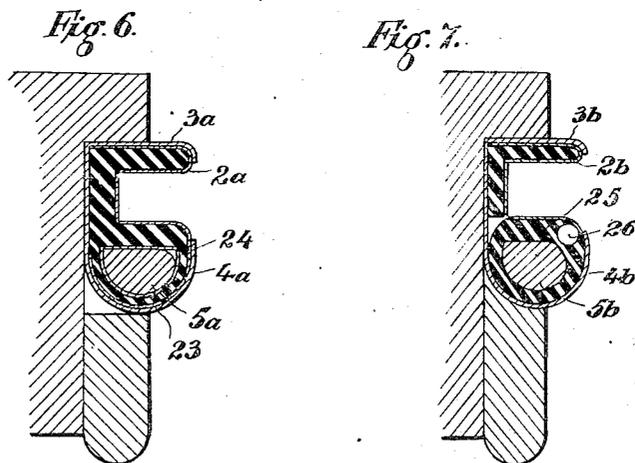
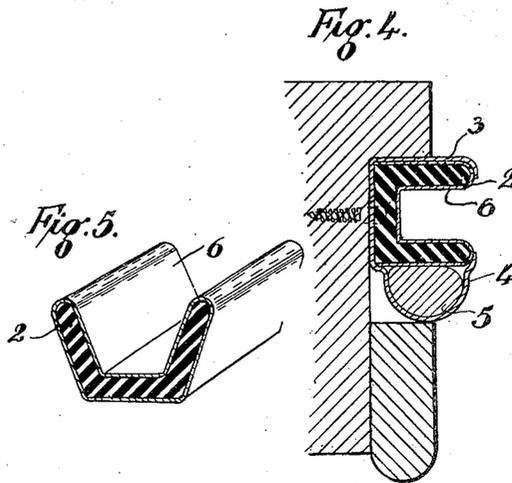
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2 Sheets-Sheet 2



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SLIDING WINDOW

Application filed March 5, 1931, Serial No. 520,273, and in Great Britain April 16, 1930.

This invention relates to windows particularly for vehicles, and of that kind which are slidably mounted in guide channels, so that they may be adjusted to different heights or into different positions.

The object of the present invention is to provide improved and more efficient means for retaining the window in the position desired.

The invention consists in the provision of a cam-bar which is adapted, when operated, to engage the window, or to engage and press in a resilient or angularly-movable side of the guide channel, so as to hold the window in place.

According to the preferred arrangement the edge of the window is arranged to engage and to slide within an inner channel of rubber or other flexible material housed within a rigid outer channel of metal, a cam-bar being provided between the opposed sides of the inner and outer channels. Similar clamping arrangements are provided at opposite edges of the window, the cams at opposite sides being operated simultaneously by a lever. To enable the window to be easily removed the outer channel at each side may consist of upper and lower sections fitted with separate cam-bars detachably connected together, so that the upper sections may be removed independently of the lower sections.

Figure 1 of the accompanying drawings is a horizontal section through a vehicle window fitted in guide channels and adapted to be clamped in position by cams arranged in accordance with the present invention.

Figure 2 is a front elevation showing the means for actuating the cams.

Figure 3 is a side elevation of the channels, with the operating rod for the cams shown in section.

Figure 4 represents a cross-section through the channels on a larger scale.

Figure 5 is a section through the resilient inner channel in its free condition, before being fitted in the metal channel.

Figures 6 and 7 are cross-sections through modifications.

Referring to the form of the invention shown in Figures 1 to 5, as applied to a slid-

ing window of a vehicle, the opposite vertical edges of a plain glass window panel 1 are arranged to slide within flexible channels or linings 2 of india-rubber or the like, fitted in rigid outer channels or casings 3 of metal attached to the vehicle body or door frame by screws. The one side of the metal channel 3 is recessed or pressed outwards to form a housing 4 along its entire length within which is located a vertically-disposed cam-bar 5 of a substantially D-section or other cam-like section. Normally, when the window is free to slide in its guides, the flat side of the cam-bar 5 lies flat against the adjacent outer wall or flexible side of the rubber channel 2, as in Figure 4, but the cam-bar is adapted to be turned angularly about its axis so that it bears upon the said wall and deflects the same inwards against the face of the glass panel 1, thus clamping the window in any desired position. Preferably the inner rubber channel or lining 2 takes the form shown in Figure 5 when in its free condition before being placed in the metal channel 3, and when inserted into the latter its inclined sides are brought parallel, so that one of these sides exerts a pressure upon the cam-bar 5 and holds it in place within its housing 4, thus preventing vibration. Also, immediately the cam-bar 5 is returned to its normal position after having been turned about its axis to clamp the window, the deflected side of the rubber channel will spring away from the glass, leaving the window free to slide. A covering 6 of plush or other suitable fabric encloses the rubber channel and prevents the rubber from adhering to the glass.

The metal channels 3 at each side of the window are made in two lengths or sections, as shown in Figure 3, their ends coming together at 7, the inner channels being also in two sections. The end portions of the housings 4, upon opposite sides of the joint 7, are cut away to leave a gap through which extend bent-up arms 8, 8, of the cam-bars 5, 5, of the respective sections. These arms 8, 8, are connected by a pin 9, so as to form a crank, the said pin 9 having reduced ends one of which is riveted to the arm of the lower cam-bar while the other end is an easy and

detachable fit in the arm 8 of the upper cam-bar. Lips or flanges 20 are formed on the gapped ends of the housings 4 to form extended bearing surfaces for the arms 8. The means for operating the cam-bars 5 comprises a central lever 10 pivoted at 11 on a bracket 12 attached to the garnish rail of the vehicle door by means of screws. Attached to the lever 10 by pivots 13, 14, are two curved links 15, 15, which cross one another and extend in opposite directions. Their outer ends are formed with eyes or sleeves 16, 16, in which are fitted pull-rods 17, 17, the outer ends of which are provided with eyes 18 engaged by the respective crank-pins 9 at opposite sides of the window. The inner ends of the rods 17 are adjustably held within and locked to the eyes or sleeves 16 of the links by means of nuts 19.

In operation, when the lever is in the position shown in Figure 2, the cam-bars 5 are in their clamping position, as in Figure 1, the same deflecting the sides of the rubber channels 2 inwards so as to press upon the face of the glass. If the lever is turned to the left the links 15, 15, are forced outwards in opposite directions and the rods 17, 17, by acting upon the crank-pins 9, turn the cams 5 into their free position as shown in Figure 4, the rubber channel 2 leaving the glass which is free to be raised or lowered but which cannot rattle owing to the cushioning effect of the lining 2. When the lever is moved to the right, into the position shown in Figure 2, the links 15, 15, are drawn inwards until the pivots 13, 14, are over dead centre, the pull being transmitted through the rods 17, 17, to the cam-bars 5 which are turned in their housings until they press the side of the channel 2 against the glass, as shown in Figure 1, thereby holding the window in its adjusted position. Any slight variation in the thickness of the glass or in the adjustment of the rods 17, 17, is taken up by the flexibility of the channel 2, but larger adjustments can be made by means of the nuts 19. Rubber buffer sleeves 21 may be fitted upon the rods 17 to prevent them from vibrating against the garnish rail, and a rubber buffer 22 may be riveted to the bracket 12 so as almost to touch the glass and thereby limit and silence the vibrations of the window.

To remove the glass from the window frame it is first lowered to the bottom of its travel and the screws that fix the top sections of the metal channels are removed. The said top sections of the channels can then be lifted out, the arms 8 of their cam-bars 5 rising off the crank-pins 9, thus leaving the lower portions of the channels in position with the pull-rods 17 on the crank pins 9. The glass may then be raised clear of the bottom portions of the channels and lifted out.

In the modification shown in Figure 6 the

one side of the rubber channel 2a is arranged to encircle the cam-bar 5a, and is provided with a pocket or housing 23 fitting the correspondingly shaped side 4a of the metal channel 3a and containing the said bar 5a. The latter, however, is a loose fit in the pocket or housing and is free to turn therein, this free turning being facilitated by providing the pocket or housing 23 with an interior lining 24 having a low co-efficient of friction. As the cam-bar 5a is not in metallic contact with any part no rattle can be produced due to vibration.

According to the further modification shown in Figure 7, the rubber channel is in two parts, namely, a fixed part 2b of rubber or the like comprising one side and the bottom, and a movable part 25 of rubber or other soft material surrounding and moving with the cam-bar 5b so as to turn with the latter within the housing 4b of the outer channel 3b. A hole or passage 26 may run the whole length of the part 25 in order to give a better cushioning action when the cam-bar 5b and its covering 25 are turned against the glass.

If desired, suitable bearings may be provided for the opposite ends of the cam-bars, which may have trunnions or the like.

Instead of the cam-bar being of the particular cam-like section shown in the drawings, it may be of any other cam-like form or of an elongated section so as to be adapted to be turned angularly to bear against the face of the window, or press the flexible side of a channel member against the same.

Having fully described my invention, what I desire to claim and secure by Letters Patent is:—

1. A rubber guide channel for a sliding window, a cam-bar enclosed within the one side of the rubber guide channel, a rigid housing containing the rubber guide channel and cam-bar, and means for operating the cam-bar so that it is caused to press the side of the rubber channel against the window and clamp the latter within the rubber channel.

2. A guide channel for a sliding window, a rubber-covered cam-bar forming the one side of the guide channel, a rigid housing enclosing the guide channel and cam-bar, and means for operating the cam-bar so as to clamp the window within the guide channel.

3. A guide channel for a sliding window, an angularly-movable cam-bar along one side of the guide channel, said cam-bar extending in the direction of the length of the channel and being adapted to turn about a longitudinal axis, a crank on the cam-bar and means for operating the crank to cause the cam-bar to press said side of the guide channel against a face of the window and clamp the latter within the guide channel.

4. A guide channel for a sliding window,

having a resilient side, an angularly-movable cam-bar disposed alongside the resilient side of the guide channel, said cam-bar extending in the direction of the length of the channel and being adapted to turn about a longitudinal axis, a crank on the cam-bar, and means for operating the crank to cause the cam-bar to press said side of the guide channel against the window and clamp the latter within the guide channel.

5. A resilient guide channel for a sliding window, comprising upper and lower sections arranged in line and housed respectively within upper and lower sections of a rigid outer channel, cam-bars housed within the rigid channel sections, a crank detachably connecting the ends of the cam-bars, means for actuating the crank to cause the cam-bars to clamp the window within the resilient channel sections, and means for enabling the upper section of the rigid channel to be detached independently of the lower section.

6. A resilient guide channel for a sliding window, comprising upper and lower sections arranged in line and housed respectively within upper and lower sections of a rigid outer channel, cam-bars disposed between the sides of the resilient channel sections and the sides of the rigid channel sections, a crank detachably connecting the ends of the cam-bars, means for actuating the crank to cause the cam-bars to press against the sides of the resilient channel sections and clamp the window within the latter and means for enabling the upper sections of the resilient and rigid channels to be detached independently of the lower sections.

7. Means for holding a sliding window, comprising resilient-sided guide channels within which the side edges of the window can slide, angularly-movable cam-bars, one of said cam-bars being associated with, and extending in the direction of the length of a side of one of said guide channels, said cam-bar being movable about a longitudinal axis which is parallel to the face of the window, a rigid housing containing each resilient channel and cam-bar to form therewith a self-contained unit adapted to be applied to a window frame, and means for operating the cam-bars to cause the same to turn angularly and press the sides of the guide channels with which they are associated, against a face of the window.

8. Means for holding a sliding window, comprising guide channels within which the side edges of the window can slide and each having a flexible integral side flange, angularly-movable cam-bars, one of said cam-bars directly engaging and extending in the direction of the length of said flexible side flange of one of said guide channels, said cam-bar being movable about a longitudinal axis which is parallel to the inside face of the said flexible side flange, a rigid housing

containing each channel and cam-bar to form therewith a self-contained unit adapted to be applied to a window frame, and means for operating the cam-bars to cause the same to turn angularly about their axes and press the flexible sides of the guide channels against a face of the window.

9. Means for holding a sliding window, comprising guide channels within which the side edges of the window can slide and each having a flexible integral side flange, angularly-movable cam-bars, one of said cam-bars being separate from, but disposed adjacent to the outer face of the flexible side flange of one of said guide channels, said cam-bar extending in the direction of the length of said flange and being movable about a longitudinal axis parallel to said flange, a rigid channel-sectioned housing containing each guide channel and cam-bar to form therewith a self-contained unit adapted to be applied to a window frame, and means for operating the cam-bars to cause the same to turn angularly within the rigid housings and about their axes and to press the flexible sides of the guide channels against a face of the window.

In testimony whereof I have affixed my signature.

FREDERICK JOSEPH STUART.

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