May 26, 1931. W. QUICK ET AL 1,807,548

DEVICE FOR CONTROLLING WINDOWS OF THE SLIDING TYPE

Filed April 25, 1929 2 Sheets-Sheet 1

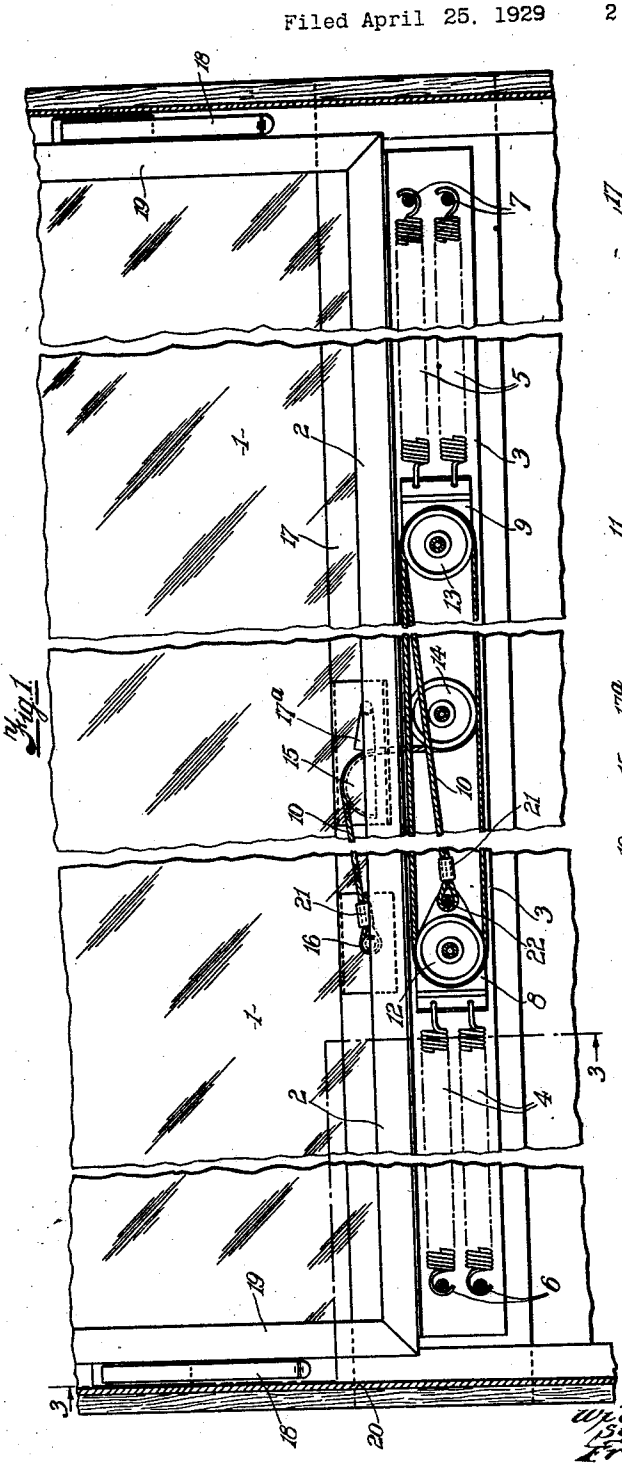


Fig. 1

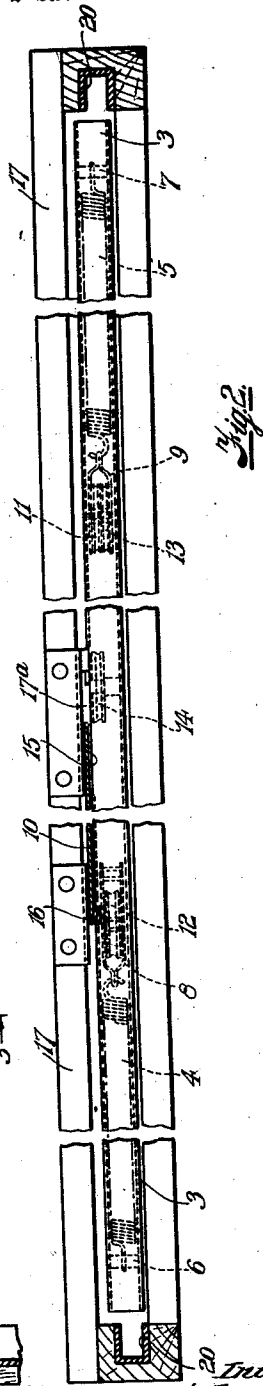


Fig. 2

Inventors
William Quick
Sydney E. Thomas
Frederick W. Berwick
By James L. Norris
Attorney

May 26, 1931. W. QUICK ET AL 1,807,548

DEVICE FOR CONTROLLING WINDOWS OF THE SLIDING TYPE

Filed April 25, 1929 2 Sheets-Sheet 2

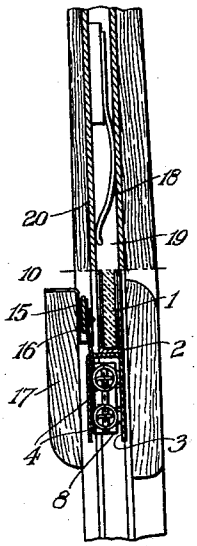


Fig 3

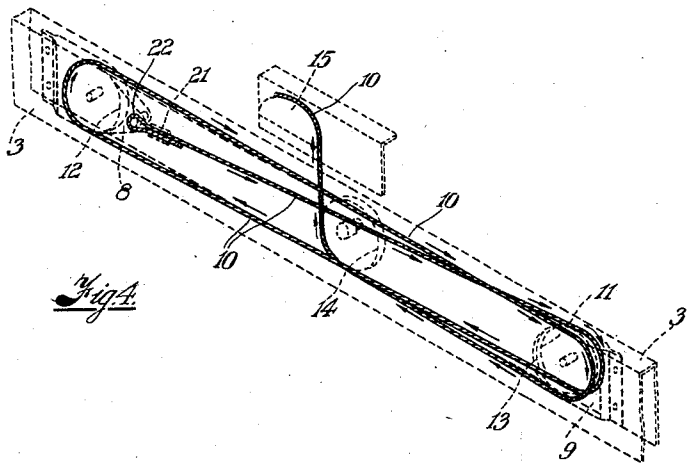


Fig 4

Inventors
William Quick
Sydney E. Thompson
Frederick W. Berwick

By James L. Morris
Attorneys

Patented May 26, 1931

1,807,548

UNITED STATES PATENT OFFICE

WILLIAM QUICK, OF LONDON, SYDNEY EDWARD THOMAS, OF HOUNSLOW, AND FREDERICK WILLIAM BERWICK, OF LONDON, ENGLAND

DEVICE FOR CONTROLLING WINDOWS OF THE SLIDING TYPE

Application filed April 25, 1929, Serial No. 358,047, and in Great Britain May 25, 1928.

This invention relates to devices for controlling the operation of windows of the slidable type and has particular application to windows of the spring balanced type used on passenger vehicles.

The object of the present invention is to provide an improved construction and arrangement of spring balanced window in which the spring control means are so disposed as to occupy the minimum amount of space and thus permit the fullest range of movement to a window under control.

According to the invention a slidable window of the spring balanced type has a pair or pairs of oppositely disposed spring control devices disposed along one of its edges or within one of the window housing elements, the spring or springs employed being connected to a fixed part of the window housing as well as to the window or its framework for the purpose of tensioning the spring or springs during travel of the window in one direction.

Reference will now be made to the accompanying drawings which illustrate by way of example a construction according to the invention and in which:—

Figure 1 is an elevation with the window framework broken away to show the spring balance mechanism, the window being in raised position,

Figure 2 is a plan of the parts shown in Figure 1,

Figure 3 is a sectional elevation taken on the line 3—3 of Figure 1 and the window being in raised position

Figure 4 is a perspective diagram of the parts shown in the preceding figures.

In the form illustrated the invention is shown applied by way of example to a framed window 1 of the vertically slidable type the lower horizontal channel shaped member 2 of the window frame being fixed to an inverted channel shaped housing 3 which encloses two pairs of helical springs 4 and 5 the outer ends of which are anchored around pins or studs 6 and 7 fixed within the outer ends of the member 3. The inner ends of the springs 4 and 5 are connected respectively to a pulley block 8 and a pulley block 9 having two pulleys, said pulley blocks being freely carried within the channel shaped member 3. To the pulley block 8 is connected one end of a wire cable 10 which extends across the base of the window, around the pulley 11 in the block 9 again across the window base, around the pulley 12 in the block 8, around the second pulley 13 in the block 9 and finally around a pulley 14 whose pivot is fixed at the centre of the channel member 3. The course taken by the cable 10 will best be understood by reference to the perspective diagram Fig. 4 the arrows indicating the direction of movement of the cable 10 when the window is lowered. The end of the cable 10 after passing partly around the centre pulley 14 passes over a fixed grooved sector 15 and is secured to a stud 16 to the waist or garnish rail 17 of the window housing.

With the arrangement above described, depression of the window moves the latter against the action of the pairs of springs 4 and 5 which are expanded and tensioned in readiness to restore the window upwardly when required. For the purpose of securing the window temporarily in any desired position of adjustment any suitable catches or frictional retaining devices may be employed.

As an additional lock a freely pivoted catch 17*a* is provided adjacent the grooved sector 15 and is so arranged that it rests by gravity against the cable 10 at the point where this cable makes contact with the sector thus preventing any movement of the cable relatively to the pulley unless the window is intentionally moved.

It is to be understood that the pulley blocks 8 and 9 are actually floating within the housing 3, being maintained in their position of horizontal alignment the one with the other by the action of the springs 4 and 5 and the tension on the wire cable 10.

Where side locking cams are employed it may be desirable to replace the lower set of cams by a spring 18 which is carried by one of the side channel members 19 enclosing the edges of the window pane and which bears against the sides of the side guide channel 20 this spring also operating to prevent vibra-

tion of a window when a vehicle is in motion.

To ensure that the ends of the wire cable 10 are securely anchored to the pulley block 8 and to the stud 16 these ends are looped and the looped portions sweated into ferrules 21 which are fixed around the cable by crushing them into position. In assembling the device the looped end 22 of the wire cable 10 is attached to the pulley block 8 and then passed around the pulleys in the sequence already described before its opposite end is attached to the stud 16.

The invention possesses the advantage that by employing helically coiled springs disposed axially parallel to the lower edge of a window and with the operating devices between the springs, the vertical height of a window and its frame is not materially increased above the normal height with the result that the window is free to open to the fullest extent desired whilst there is no external operating gear liable to be fouled by or to impede in any way the window movement.

It is to be understood that the invention is not limited to the precise details of construction above described as it is equally applicable to a frameless slidable window in which case a channel shaped member such as the housing 3 above described may be secured to the upper, lower or a side edge of the window to accommodate the springs and their connections. Alternatively, the arrangement of springs which may be single instead of duplicated may be disposed within the garnish rail or other convenient part of an automobile window housing.

We claim:

1. In a window of the type described, a casing and a sash slidable in said casing, oppositely disposed springs mounted on the sash, each of said springs having one end connected to the sash, pulleys also mounted in the sash to which the other ends of said springs are connected, a cable movable over said pulleys, and having one end connected to the casing and the other end to one of the pulleys for the purpose of tensioning the springs during the travel of the window in one direction.

2. In a window of the type described, a casing and a sash slidable in said casing, a pair of pulley blocks movable in said sash, a pair of oppositely disposed coiled springs each having one of its ends connected to said sash and its other end connected to one of said blocks, a single pulley rotatable in one of said blocks, a pair of pulleys rotatable in the other block, a fourth pulley rotatable on a fixed axis carried by said sash between said blocks, and a cable having one end connected to said casing and passing first over the last-named pulley, secondly over one of said pair of pulleys, thirdly over the first-named pulley, and fourthly over the other of said pair of pulleys and having its other end connected to the block which carries the single pulley.

In testimony whereof we have hereunto set our hands.

WILLIAM QUICK.
SYDNEY EDWARD THOMAS.
FREDERICK WILLIAM BERWICK.