

May 12, 1942.

B. S. FLORADAY

2,283,002

CHANNEL ASSEMBLY

Filed July 27, 1939

2 Sheets-Sheet 1

FIG. 1.

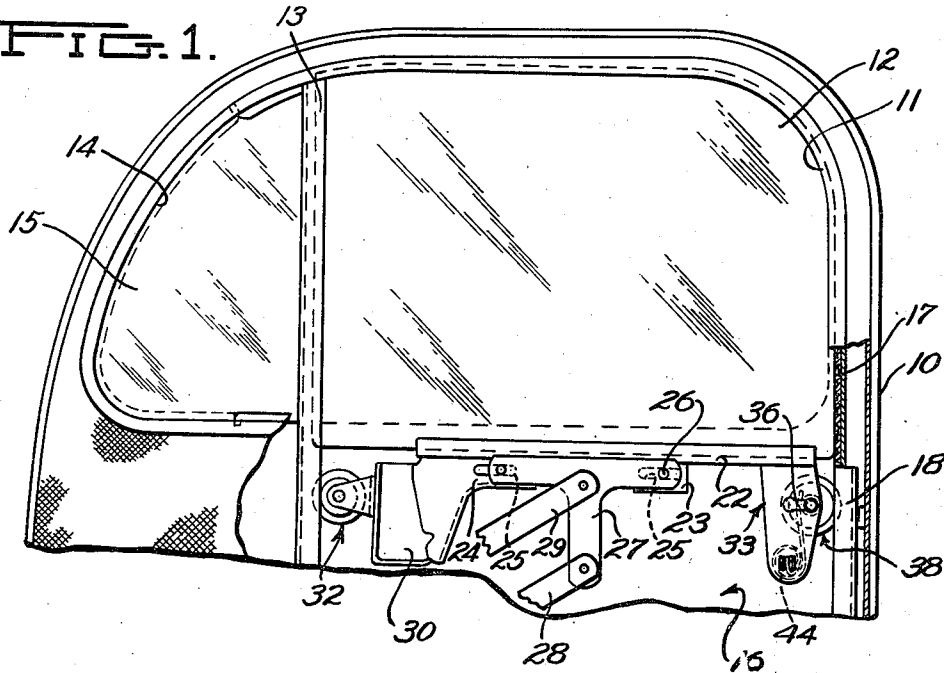


FIG. 3.

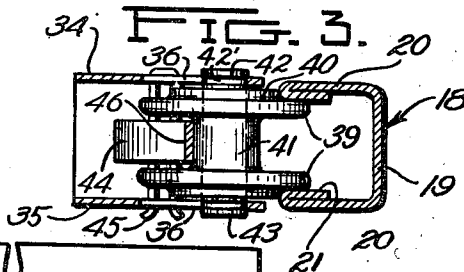
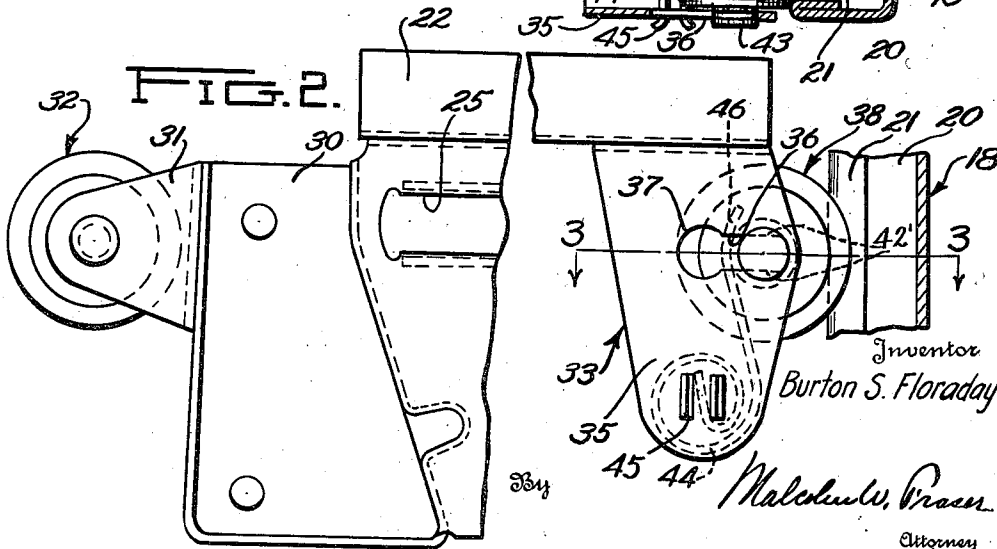


FIG. 2.



Inventor
Burton S. Floraday

Malcolm W. Brasher
Attorney

May 12, 1942.

B. S. FLORADAY

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FIG. 4.

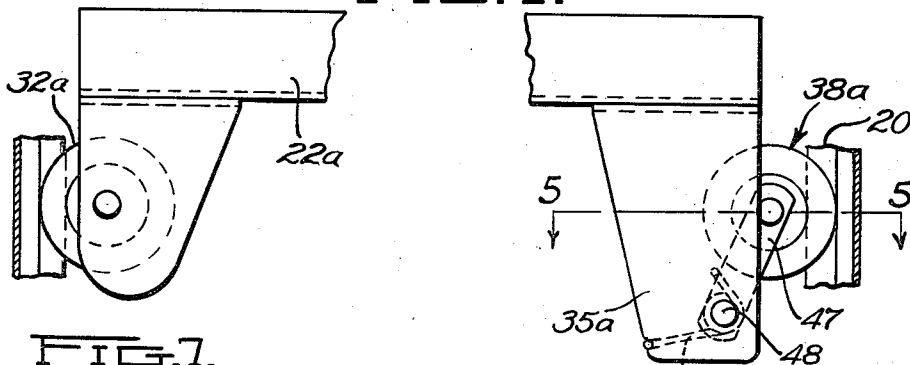


FIG. 7.



FIG. 6.

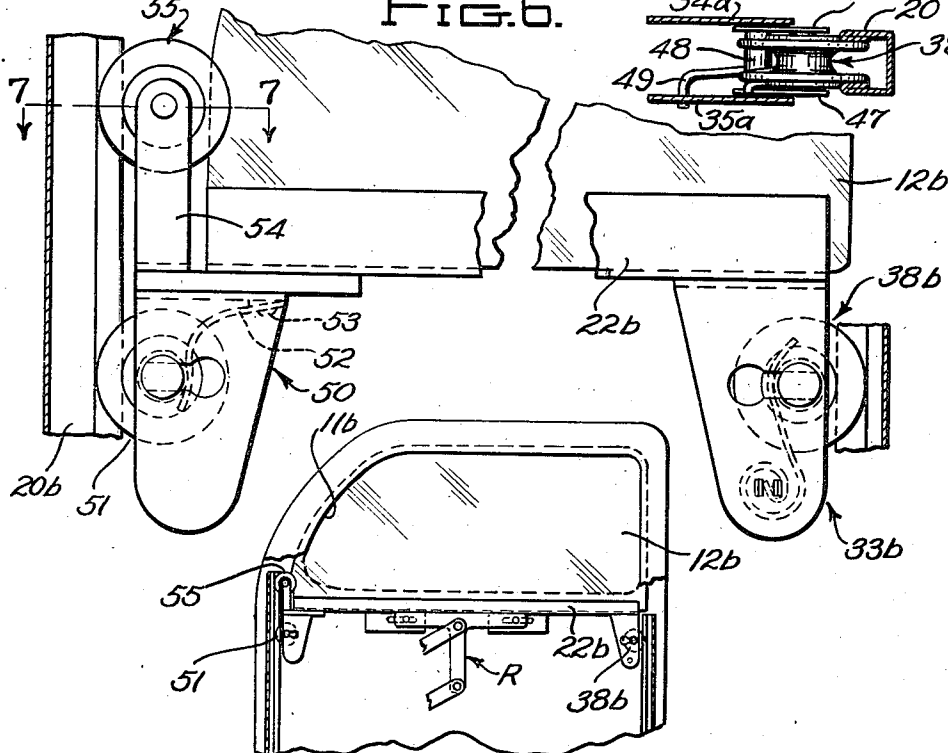


FIG. 5.

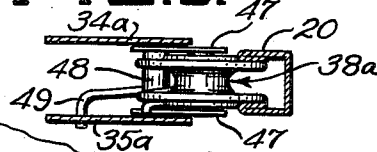
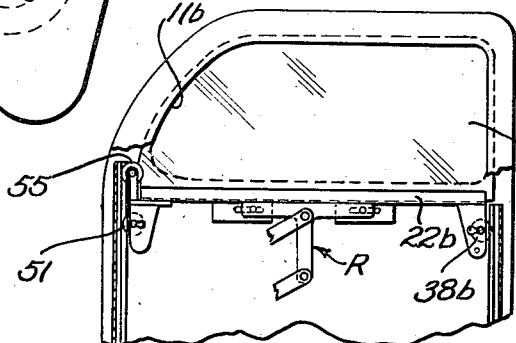


FIG. 8.



Inventor
Burton S. Floraday

By

Malcolm W. Fraser

Attorney

UNITED STATES PATENT OFFICE

2,283,002

CHANNEL ASSEMBLY

Burton S. Floraday, Toledo, Ohio, assignor to
Marvel Equipment Corporation, Detroit, Mich.,
a corporation of Michigan

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10 Claims. (Cl. 296—44.5)

This invention relates to the guiding of the movement of windows for vehicles particularly automobiles, in which the windows are mounted for sliding movement toward and away from positions to cover or uncover the window opening, a well being disposed below the window opening for receiving the window and guiding devices being disposed within the well to facilitate and guide the movement of the window.

An object is to produce new and improved guide means disposed within the well for the window; such means including anti-friction devices, such as rollers, carried by the window, certain of which have lost motion toward and away from guide tracks within the window well, spring means urging these devices into intimate contact with the guide tracks and compensating for inaccuracies or irregularities in the associated structures, thereby to afford limited movement of the window in directions at right angles to the path of movement of the window.

Another object is to produce guide means of the above character affording a three-point contact with the guide tracks, certain of the anti-friction devices being arranged above and below the inner edge of the window, thereby to facilitate movement of the window and to militate against cramping of the window in the guide channels.

Other objects of the invention will hereinafter appear and for purposes of illustration but not of limitation, embodiments of the invention are shown in the accompanying drawings in which

Figure 1 is a fragmentary side elevation, partly broken away and partly in section, of an automobile door, embodying the invention;

Figure 2 is an enlarged fragmentary view of the guiding means, parts being omitted and broken away for purpose of clarity;

Figure 3 is a transverse sectional view on the line 3—3 of Figure 2;

Figure 4 is a fragmentary view of an alternate form of guide means in which one of the rollers is pivotally connected to its bracket;

Figure 5 is a sectional view substantially on the line 5—5 of Figure 4;

Figure 6 is a fragmentary view of another form of guide means in which three rollers are employed, one roller being disposed above the lower edge of the window glass;

Figure 7 is a sectional view on the line 7—7 of Figure 6; and

Figure 8 is an inner fragmentary side elevation, partly broken away and partly in section,

of an automobile door equipped with the guiding means shown in Figures 6 and 7.

The illustrated embodiment of the invention comprises an automobile door 10, such as a front door, having a window opening 11 which is adapted to be closed by a window glass 12. Separated from the window opening 11 by a pillar or channel bar 13 is a window opening 14, generally triangular in shape, a window glass 15 of the so-called wing type being suitably mounted, preferably on an up and down pivot, to close the opening 14. The channel bar which is preferably U-shaped in cross section with a lateral extension to overlap the glass 15, extends into a well 16 into which the vertically movable window 12 moves to uncover the window opening 11. The opposite side and top edges of the window glass 12 when in closed position are received by substantially U-shaped felt channel members 17 in the usual manner. In opposed relationship to the channel bar 13 below the opening 11 is a vertically disposed guide channel 18. The guide channels 13 and 18 below the window opening 11 are similarly formed and, as shown on Figure 3, each is provided with a bottom wall 19 and parallel side walls or flanges 20, the free ends of which are bent over upon themselves as indicated at 21 to provide guide tracks.

Embracing the lower edge of the window glass 12 is a channel member 22 to the underside of which are secured laterally spaced depending retainer parts 23 and 24. Each retainer part is formed with a horizontally elongate guide 25 receiving guide members 26 respectively on a T-shaped plate 27 to which are pivoted the outer ends of parallel regulator arms 28 and 29. The regulator arms 28 and 29 form part of a window regulator connected to be actuated by a suitable crank handle (not shown) on the inside of the door by which the window may be raised or lowered as desired. Since the construction and operation of the window regulator form no part of the present invention, more detailed illustration and description are not considered necessary.

Integral with the retainer part 24 is a bracket plate 30 formed with a mounting plate 31, which is rigid with respect to the bracket plate 30. Carried by the mounting 31 is a roller 32 of a construction which will hereinafter be described and which runs along the tracks formed by the guide channel 13.

At the opposite side of the window 12, fixed to the adjacent end of the channel 22 and depending therefrom, is a bracket 33 formed of a pair

of laterally spaced plates 34 and 35. The plates 34 and 35 are formed with registering horizontally elongate slots 36 which terminate at their inner ends in enlarged openings 37. Carried by the plates 34 and 35 is a roller 38 having a pair of laterally spaced flanged rims or wheels 39, each having an outer flange 40 adapted to bear against and ride along the free edge of the adjacent track 20, the rim portion being disposed on the inside thereof. The rims 39 are integrally connected by a hub portion 41 and the roller is mounted for rotation about a shaft 42 having its outer end portions disposed respectively in the elongate slots 36.

The shaft 42 is formed adjacent its opposite ends with parallel grooves 42' into which fit respectively the upper and lower edge portions of the slots 36. It will thus be apparent that in assembling the roller 38, the roller is first placed between the bracket portions 34 and 35 with its axial hole in alignment with the enlarged openings 37. The shaft or pin 42 is then inserted in such manner that the slots 42' are disposed horizontally to receive the edge portions of the slot 36. It will thus be apparent that the shaft 42 can slide horizontally but is held from turning movements and assembly can be readily accomplished. Outward movement of the roller 38 toward the tracks 20 is defined by the outer end of the slots 36. The roller 32 is formed similarly to the roller 38 except that the ends of its shaft are flanged to hold it in place.

Fixed to the lower portion of the bracket 33 and disposed between the plates 34 and 35 is a spiral spring 44, which has its inner end disposed between the arms of a U-shaped clip 45 and its free end 46 bearing against the inner side of the hub 41 of the roller. In this manner the roller 38 is urged toward the guide tracks 20. The lost motion afforded by the roller 38 compensates for irregularities or inaccuracies in the positioning and conformation of the guide bars 13 and 18 and associated parts and affords limited adjusting movement so that the guide tracks are intimately engaged and the movement of the window 12 upwardly and downwardly facilitated.

In the form shown in Figures 4 and 5, the roller 38a which is of similar construction to the roller 38 is carried for rotation between a pair of arms 47, the inner ends of which are pivoted on a pin 48 which is connected at its ends to the bracket plates 34a and 35a. A spring 49 is anchored to the bracket plate 35a at one end, encircles the pin 48, and engages one of the arms 47 for urging the roller 38a into engagement with the track 20. In this form a roller 32a is mounted at the opposite end of the glass engaging channel 22a for movement about a fixed shaft as will be readily understood. In other respects this form is similar to that above described, the spring tensioned roller 38a affording the lost motion to compensate for irregularities and inaccuracies in the door construction and assembly.

In the form shown in Figures 6 to 8, the window glass 12b is embraced at its lower edge by a channel 22b. The window is raised and lowered by suitable regulator mechanism R as above described. At one side of the channel 22b depends a bracket 33b carrying a roller 38b similar to the roller 38 above described and similarly mounted for lost motion in a horizontal direction. Since the roller 38b is similarly constructed and mounted as above described, detailed

description is not considered necessary here. At the opposite end of the channel 22b is fixed a depending bracket 50 similar to the bracket 33b and carrying a roller 51 which is similarly mounted to the roller 38b having lost motion in a horizontal direction. In this form, it will be noted that a leaf spring 52 engages the hub of the roller 51 at one end and the opposite end is secured by a rivet 53 to the bracket 50. Secured to the upper end of the bracket 50 is a pair of upstanding bracket arms 54 on which is mounted a roller 55 similar in form to the roller 51 and engaging the guide tracks 20b similar to the guide tracks 20 above described. As indicated in Figure 7, it will be noted that the adjacent edge of the window glass 12b extends between the flanged wheels 39b.

It will be observed that the wheel 55 is disposed above the inner or lower end of the glass 12b and the rollers 51 and 33b are disposed below the inner end of the glass 12b. Preferably the rollers 33b and 51 have lost motion in a horizontal direction while the roller 55 does not have such lost motion. As indicated in Figure 8, the window opening 11b is such that when the window is in its raised or closed position, the roller 55 is concealed by the usual garnish molding.

The arrangement of the rollers 55, 51 and 33b affords a three point contact which not only effectively guides the movement of the window toward and away from closed position but also militates against tilting or cramping of the window glass in the guide channels. It also provides a support of particular advantage in the case of a window glass which is not fully engaged at its side edges in the usual felt channels.

It is to be understood that numerous changes in details of construction, arrangement and operation may be effected without departing from the spirit of the invention especially as defined in the appended claims.

What I claim is:

1. In a vehicle having a window opening, a window movable to cover and uncover the opening, there being a well into which said window is movable, means for guiding the movement of said window, said guiding means comprising an elongate rigid guide extending into said well and providing a track, a bracket connected to the end of the window which extends into said well, a roller engaging said track, means for mounting said roller on said bracket to afford lost motion thereof in a direction toward and away from the track, said mounting means including an elongate slot in said bracket and a shaft for said roller having a pair of parallel slots receiving opposite edge portions of said slot, and spring means urging said roller outwardly toward said track.

2. In a vehicle as claimed in claim 1, in which said elongate slot terminates at its inner end in an enlargement to admit said roller shaft.

3. In a vehicle as claimed in claim 1, in which said bracket comprises a pair of depending spaced plates, each plate having said elongate slot, and opposite end portions of said shaft having said parallel slots to receive edge portions of said elongate slots respectively.

4. In a vehicle having a window opening, a window movable to cover and uncover said opening, there being a well into which said window is movable, means for guiding the movement of said window, said guiding means comprising a pair of elongate rigid spaced guides extending

into said well, a roller engaging one of said guides, a mounting for said roller providing a connection to the end of the window which extends into said well, a pair of vertically spaced rollers engaging the other guide, means to mount said rollers on said window whereby one roller of said pair is disposed a substantial distance above and remote from the inner end of the window and the other is disposed below the aforesaid end of said window, means associated with at least one of said rollers affording lost motion toward and away from the adjacent guide, and spring means urging said last roller toward such guide.

5. In a vehicle having a window opening, a window movable to cover and uncover said opening, there being a well into which said window is movable, means for guiding the movement of said window, said guide means comprising a pair of spaced elongate rigid guides extending into said well, a roller connected to the end of said window which extends into said well and mounted adjacent one side thereof to engage the adjacent guide, a movable mounting for said roller enabling movement toward and away from said guide, spring means urging said roller toward said guide, a pair of rollers on the opposite side of said window, one of the rollers being a substantial distance above and remote from the aforesaid end of the window, means providing a connection between said rollers and the window, means for mounting the lower of said rollers to afford lost motion toward and away from the adjacent guide, and spring means urging said last roller toward the adjacent guide.

6. A guide for a vertically movable window of a vehicle body comprising a bracket depending from the lower end of the window at one side thereof, a roller, a mounting for the roller enabling movement substantially parallel with the lower edge of the window, spring means urging the roller in an outward direction, a second bracket secured to the opposite side of the window, a roller, means to mount the roller on said bracket enabling movement thereof in a direction parallel to the lower edge of the window, spring means urging said roller in an outward direction, an extension on said last bracket, and a roller on said extension having its axis fixed and in parallel spaced relationship to the axis of said last mentioned roller.

7. A guide for a vertically slidable window of a vehicle body comprising a pair of rollers below the bottom of the window and adjacent opposite side edges thereof, means to mount each roller to the window to enable lost motion thereof in a direction toward and away from each other, a spring associated with each roller for urging the same in an outward direction, and a third roller spaced a substantial distance above and remote from the bottom edge of the window and having

its axis in parallel relation to the roller below it, and means for mounting said last roller providing a connection to the window.

8. In a guide for a vehicle window as claimed in claim 7 characterized in that said third roller is provided with spaced flange parts, the window extending into the space between said flange parts.

9. In a vehicle having a window opening, a window movable to cover and uncover the opening, there being a well into which said window is movable, means for guiding the movement of said window, said guiding means comprising an elongate rigid guide extending into said well and providing a track, a bracket connected to the window and adapted to extend into said well, a roller engaging said track, means for mounting said roller on said bracket to afford movement thereof in a direction toward and away from said track, said mounting means including a keyhole slot formed in said bracket with its enlarged portion remote from said track, a shaft for said roller adapted to be extended through the enlarged portion of said keyhole slot in assembly, said shaft being of reduced diameter adjacent its ends to be received within the restricted portion of said keyhole slot and to be guided by the edges thereof, and spring means urging said roller toward said track and into the restricted portion of said keyhole slot.

10. In a vehicle having a window opening, a window movable to cover and uncover said opening, there being a well into which said window is movable, means for guiding the movement of said window, said guide means comprising a pair of spaced elongate rigid guides extending into said well, a bracket depending from the lower end of the window at one side thereof, a roller engaging the adjacent rigid guide, a mounting for said roller enabling movement substantially parallel with the lower edge of the window in directions toward and away from said rigid guide, spring means urging the roller in an outward direction toward said rigid guide, a second bracket secured to the opposite side of the window, a roller on said second bracket engageable with the adjacent rigid guide, means to mount the roller on said second bracket enabling movement thereof in a direction parallel to the lower edge of the window, spring means urging said second roller in an outward direction toward the respective rigid guide, an extension on said last bracket, and a roller on said extension having its axis fixed and in parallel spaced relationship to the axis of said last mentioned roller, said fixedly mounted roller having a pair of spaced annular rim flanges receiving the adjacent rigid guide therebetween on one side and the adjacent portion of the window on the opposite side.

BURTON S. FLORADAY.