April 2, 1935. H. E. VAN VOORHEES ET AL 1,996,559

WINDOW ASSEMBLY

Filed April 21, 1933 2 Sheets-Sheet 1

Fig. 1.

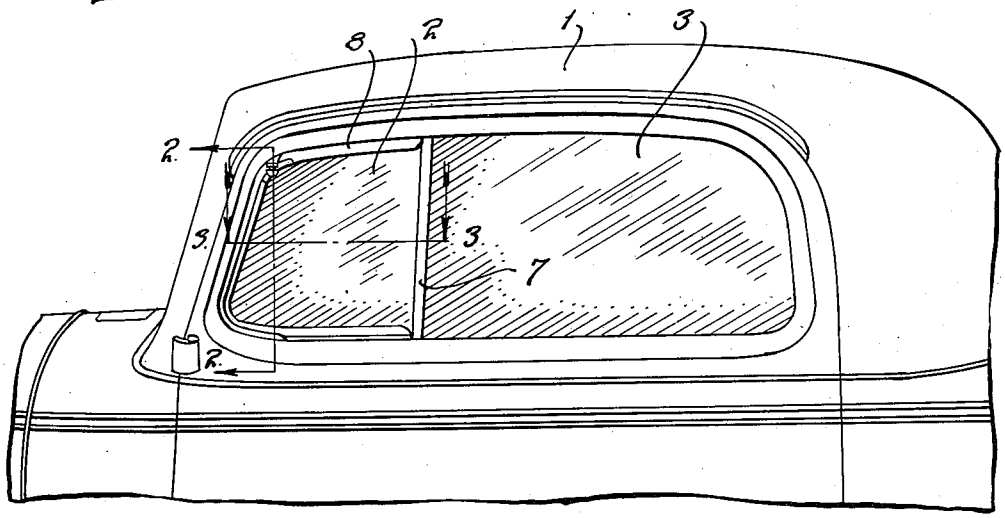


Fig. 10.

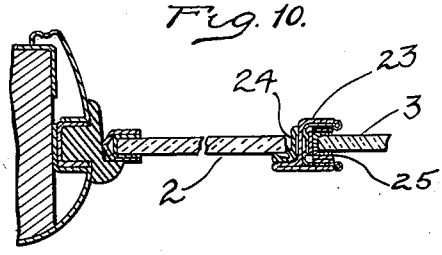


Fig. 3.

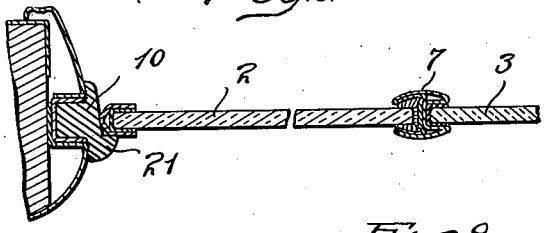
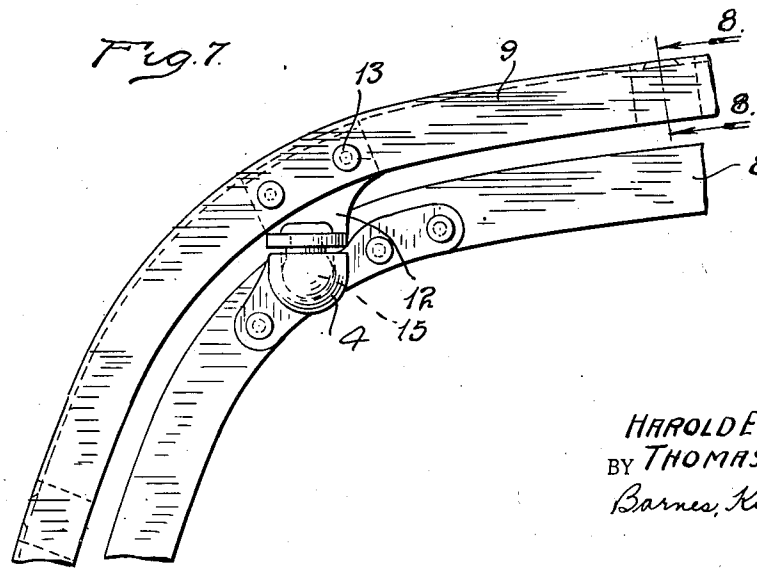


Fig. 8.



Fig. 7.



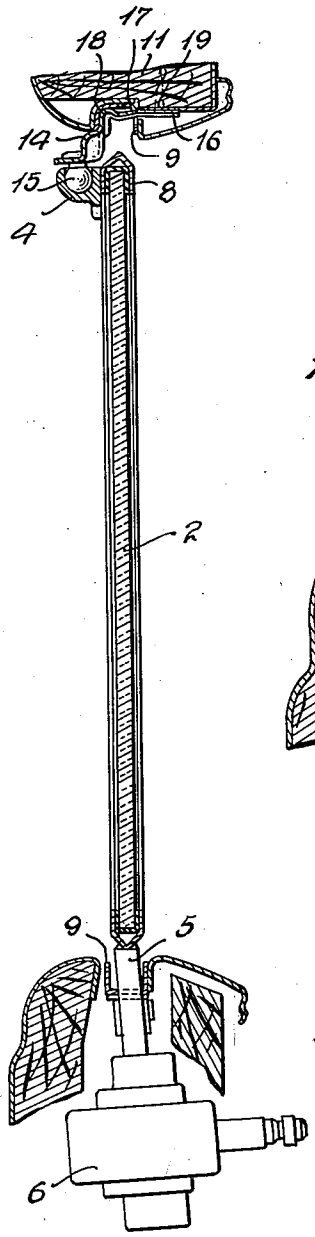
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Filed April 21, 1933 2 Sheets-Sheet 2

Fig. 2.



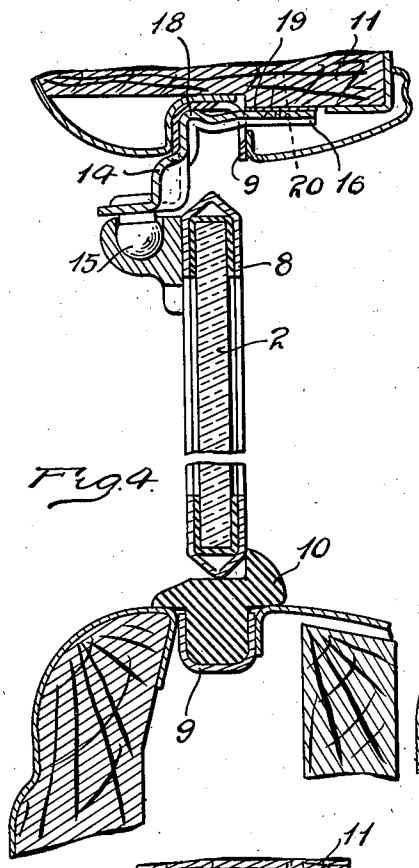


Fig. 4.

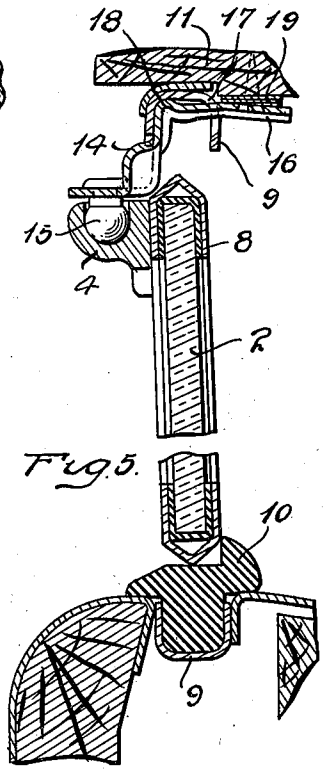


Fig. 5.

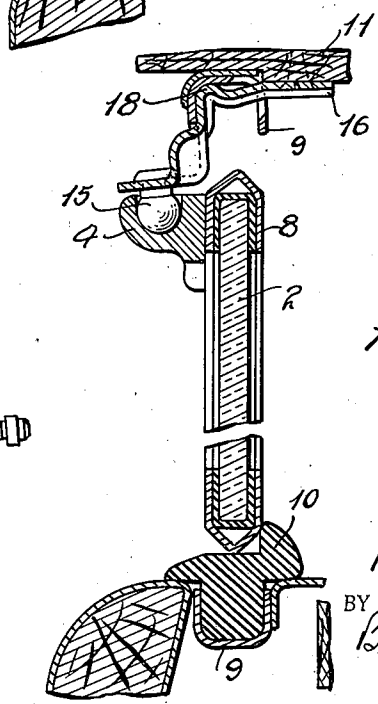


Fig. 6.

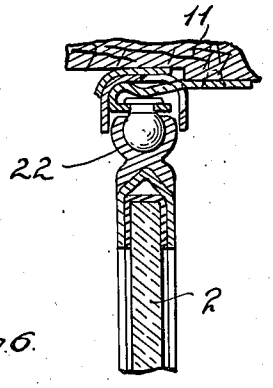


Fig. 9.

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UNITED STATES PATENT OFFICE

1,996,559

WINDOW ASSEMBLY

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Application April 21, 1933, Serial No. 667,164

9 Claims. (Cl. 296—44)

This invention relates to a window assembly of the pivoted panel type.

In a window assembly of the type having a pivoted panel which is swingable into open and closed position it is essential that the panel be properly aligned with the weatherstrip that seals its edges and in particular the vertical edges, or that it be aligned with a cooperating pillar or fixed panel. The pivoted panel may also be associated and necessarily aligned with a slidable panel having just a weatherstrip or an interlocking weatherstrip channel along the edge adjoining the pivoted panel. In the assembly of the pivoted panel in the window opening it is often very difficult to accomplish this alignment. This condition is aggravated where either or both of the pivots are offset from the plane of the window glass panel. Hence, it is an object of this invention to produce a pivoted panel with an adjustable pivot for aligning the panel with its cooperating member whether it be a weatherstrip, a pillar or another window panel.

This invention also contemplates a pivoted panel provided with a pivot offset from the plane of the panel which pivot is carried by a fulcruming support member whch may be fulcrumed to adjust the pivot and thereby in turn align the glass panel and its cooperating member.

Another object of this invention is to produce a swinging panel having an offset ball and socket pivot which pivot is carried by a support bracket provided with a fulcrum, which bracket can be swung about its fulcrum and shimmed to in turn align the pivoted panel in the window opening.

In the drawings:

Fig. 1 is a side elevation of a vehicle body showing a ventilating window assembly having a swinging panel.

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 similar to Fig. 2 showing the swinging window panel in exact vertical alignment.

Figs. 5 and 6 are sections similar to that of Fig. 4 showing various shim adjustments for the ball and socket pivot.

Fig. 7 is a detail view of the weatherstrip channel, the window sash channel and the ball and socket pivot between the two.

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

Fig. 9 is a sectional view of a modified form of the invention showing the ball and socket pivot in the plane of the window panel.

Fig. 10 is a section similar to Fig. 8 showing a fixed pillar and weatherstrip instead of the H-channel.

Referring more particularly to the drawings there is shown an automobile body 1 having a window assembly comprising a pivoted panel 2 and a slidable panel 3. This vehicle window assembly is shown by way of explanation only and it is specifically understood that the invention is not limited in its applicability to automotive vehicle window assemblies alone. In the instant assembly the pivoted panel 2 is provided at its top edge with the ball and socket joint 4 which is offset from the plane of the panel 2 and is mounted at its bottom edge upon the rotary shaft 5 which is operated by the regulator 6. The panel 3 is arranged to slide up and down in the window opening and is provided along its forward edge with an H-channel 7 having a weatherstrip lining which travels with the panel 3 and in raised position interlocks the swinging panel 2 and the sliding panel 3. In the specific example shown, it is obvious that the swinging panel 2 must be properly aligned and in the same plane with the sliding panel 3 and its H-channel 7, both to permit the panel 3 and the H-channel 7 to be raised into interlocking relation with the panel 2 and to prevent any stress upon the panel 2 when in interlocking engagement with the H-channel 7. If the panel 2 is not properly aligned with the H-channel 7, and in substantially the same plane as the sliding panel 3, the H-channel will mar or chip the panel 2 as the H-channel and panel 3 are raised and will also force the panel 2 into alignment thus placing it under a stress.

To obviate this difficulty it is proposed to provide the pivoted panel with an aligning device which will now be described. The pivoted panel 2 is mounted in a metal sash channel 8 which in turn is pivotally mounted in a metal channel 9 which carries the weatherstrip 10 for sealing the front, top and bottom edges of the pivoted panel. The channel 9 may be secured in the window frame 11 in any suitable manner, such as by passing nails or screws through the offset lugs 12. In the assembly of the channel 9 and associated pivoted panel 2 in the window opening it is difficult to fit the channel 9 in the window frame 11 without distorting the channel 9 somewhat. It is evident that even a small distortion of the channel 9 will be transmitted through the offset ball and socket joint to the pivoted panel 2, thus throwing the pivoted panel 2 out of alignment with the H-channel and cooperating panel 3. To overcome this difficulty it is proposed to provide the channel member 9 with a shim adjust-

ment. In the preferred form this shim adjustment comprises an L-bracket 12 which is riveted within the channel 9 as at 13. One leg 14 of the bracket supports the ball 15 of the ball and socket joint and the other leg 16 projects through a suitable opening 17 in the channel 9. The corner 18 of the L-bracket projects somewhat beyond the leg 16, preferably about 1/64 of an inch, and thus serves as a fulcrum about which the legs 14 and 16 may be turned.

Referring to Figure 4 it will be seen that the pivoted panel 3, as indicated by the center line, is in perfect vertical alignment and if the cooperating H-channel and sliding panel 3 are likewise truly vertical, then in such case a shim 19 will be inserted between the leg 16 and the window frame 11 and the screw 20 drawn tight. The shim 19 takes care of the 1/64 inch projection of the fulcrum 18 beyond the leg 16. If the cooperating member such as the H-channel is not truly vertical or misaligned from the swinging panel, then alignment can be attained as shown in Figures 5 and 6.

Figure 5 is a somewhat exaggerated view showing several shims 19 between the leg 16 and the frame 11. In such a case the bracket 16 swings about its fulcrum 18 thus causing the ball and socket joint 4 to swing somewhat outwardly of the window opening to in turn throw the pivoted panel 2 outwardly or to the left of a true vertical axis. This would throw the panel 2 into proper alignment with the H-channel 7 and sliding panel 3 in case they were out of true vertical alignment. On the other hand, if the pivoted panel were swung outwardly of the window opening too far then, as shown in Figure 6, the shims could be removed from beneath the leg 16 whereupon the bracket 12 fulcrums about its corner 18 to in turn throw the ball and socket joint 4 inwardly of the window opening thus swinging the pivoted panel 3 somewhat inwardly or to the right of a true vertical axis and into alignment with the H-channel 7 and into the same plane as the sliding panel 3.

It will also be noted that if the window is misaligned in the window opening, as shown in Figure 5, for instance, so that the panel is tilted outwardly of the window opening or to the left of the true vertical, that the upper portion of the panel would come into sealing engagement with the lip 21 of the weatherstrip 10 before the lower portion of the panel thus permitting an air leak by the lower forward edge of the pivoted panel. This misalignment can likewise be remedied by removing some of the shims between the leg 16 of the bracket 12 and the window frame 11 until the panel is swung to the position shown in Figure 4 or into alignment with the weatherstrip.

A further advantage of the ball and socket pivot construction is that the ball is self-adjusting in the socket and consequently there will be no binding in the pivot.

In Figure 9 there is shown a modification in which the ball and socket pivot 22 is mounted on center or in the plane of the window panel 2. In this case the ball and socket pivot 22 is adjustable the same as that shown in the principal form of the invention.

In Figure 10 the H-channel 7 is omitted and instead the window opening is divided by a fixed pillar 23 which is provided with a weatherstrip 24 for sealing the rear edge of the swinging panel 2 and a window guide channel 25 for guiding the forward edge of the sliding panel 3.

The broad idea of an automobile window assembly comprising a front swinging panel pivoted between its front and rear vertical edges in conjunction with a rear sliding panel is claimed in copending applications by Alfred J. Fisher, Serial No. 644,622, filed November 28, 1932, and Emory Glenn Simpson, Serial No. 618,188, filed June 20, 1932.

We claim:

1. In a window assembly a swingable panel, opposed pivots at the top and bottom edges of the said panel one of which is a ball and socket pivot offset from the plane of the panel, a cooperating member for alignment with an upright edge of the window panel when in closed position, and shim means associated with the ball and socket pivot for adjusting the same in the window opening to align the pivoted panel with the said member.

2. In a window assembly a swingable panel, opposed pivots at the top and bottom edges of the said panel, one of which is a ball and socket pivot offset from the plane of the panel, a cooperating member for alignment with an upright edge of the window panel when in closed position, and a support for the said ball and socket pivot provided with a fulcrum whereby the said support may be swung about its fulcrum to adjust the ball and socket joint to align the pivoted panel with the said member.

3. In a window assembly a swingable panel, opposed pivots at the top and bottom edges of the said panel, one of which is a ball and socket pivot offset from the plane of the panel, a cooperating member for engaging an upright edge of the window panel when in closed position, a bracket provided with a fulcrum for supporting the ball and socket pivot, and shim means associated with the bracket member for adjusting the ball and socket pivot to align the pivoted panel with the said member.

4. A window assembly comprising in combination a window frame, a channel member arranged to be secured in the said frame member, a window glass panel mounted in said channel and having a pair of pivots about which the panel swings to open and closed position, one of which pivots is mounted on the said channel member, and shim means associated with the said channel member for twisting the channel member to adjust the channel and pivot and thereby align the pivoted panel in the window opening.

5. A window assembly comprising in combination a window frame, a channel member arranged to be secured in the said frame member, a window glass panel having a pair of pivots about which the panel swings to open and closed position, one of which pivots is mounted on the said channel member, a bracket member secured to the last mentioned pivot and to the said channel provided with a fulcrum and having a projecting leg having a shim adjustment about the fulcrum to adjust the pivot inwardly or outwardly of the window opening to align the said swinging panel in the window opening.

6. The combination with a window assembly of the type having a window opening arranged to be closed by cooperating sliding and pivoted panels lying in the same plane when in window closing position, a fulcrumed support for one of said pivots and shim means associated with a fulcrumed support of the said pivot for adjusting the said pivot whereby the pivoted panel may be aligned in the same plane with the sliding panel when in window closing position.

7. The combination with a window assembly of

the type having a window opening arranged to be closed by cooperating sliding and pivoted panels lying in the same plane when in window closing position, one of the pivots of the said pivoted panel being of the ball and socket type and offset from the plane of the panel, of a support for the said ball and socket pivot provided with a fulcrum about which the said support may be fulcrumed to adjust the said ball and socket pivot whereby the said pivoted panel may be aligned in the same plane with the slidable panel.

8. In a window assembly the combination with a swingable panel having a pair of pivots along opposite edges about which the panel swings to open and close the window opening, and a fulcrum for one of said pivots about which the pivot may be fulcrumed to adjust the panel in the window opening.

9. In a window assembly, a panel having a pair of pivots along opposite edges about which the panel may be swung to open and close the window opening, a cooperating member for engaging an edge of the window panel when in closed position, a fulcrum for one of the said pivots, and shim means associated with the fulcrumed pivot for adjusting the said pivot to align the said pivoted panel with the cooperating member.

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