

Aug. 1, 1939.

O. M. EDWARDS

2,167,974

WINDOW CONSTRUCTION

Filed March 4, 1938

2 Sheets-Sheet 1

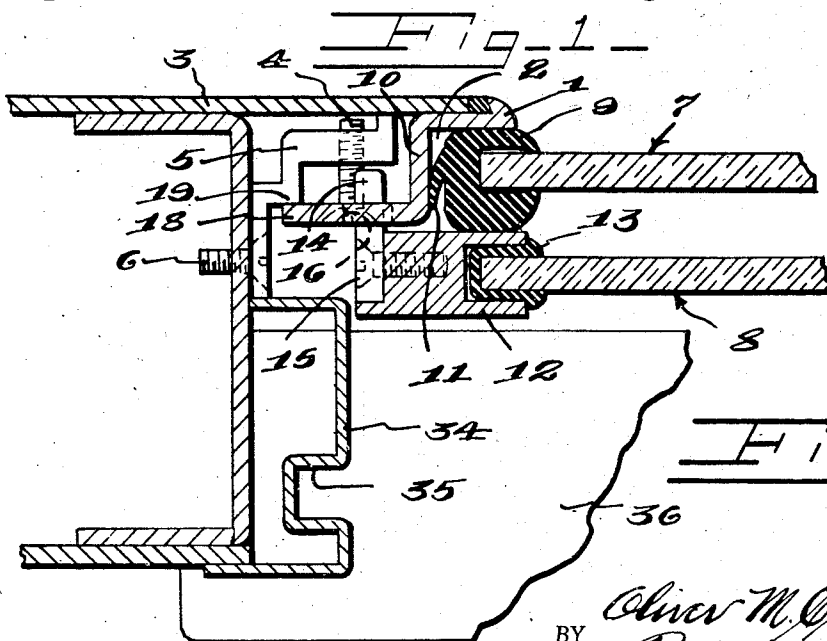
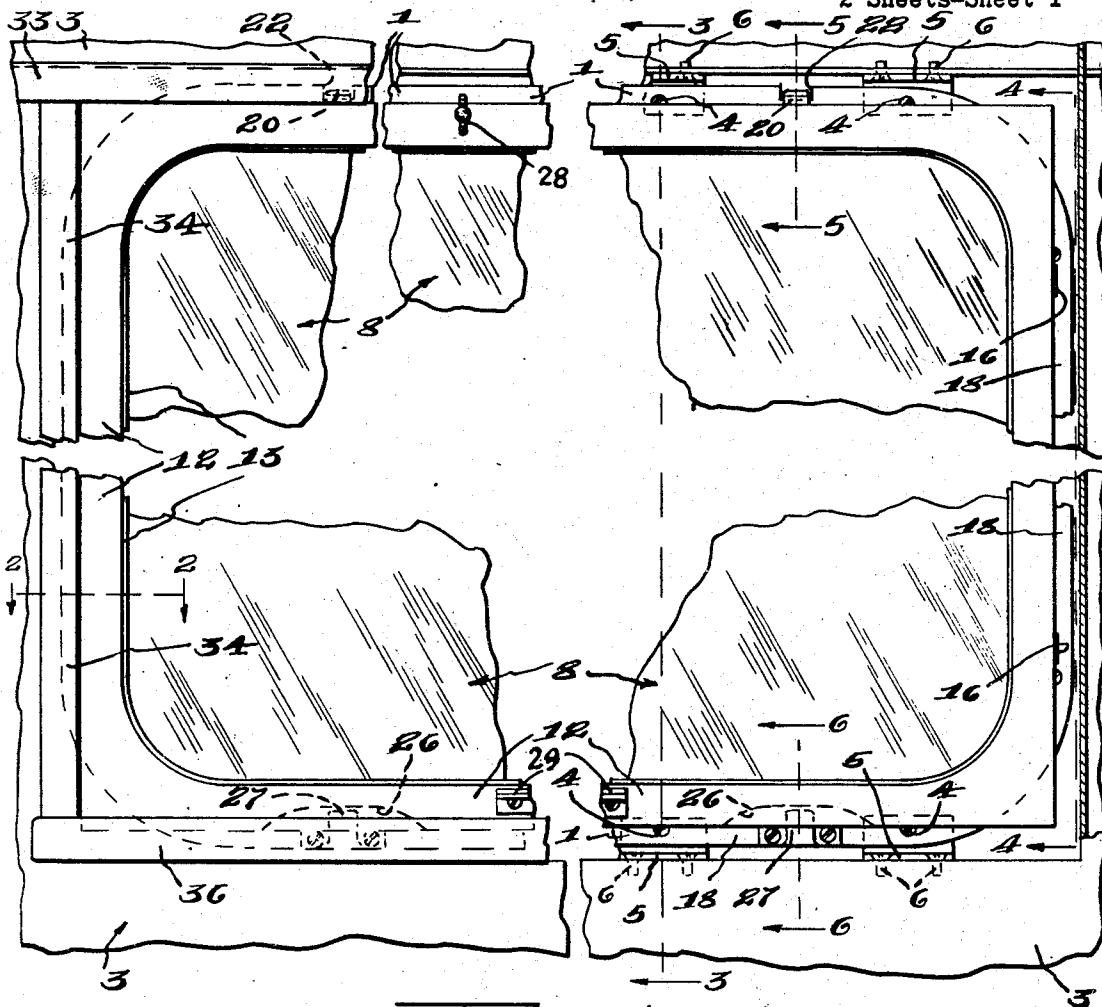


Fig. 2

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2 Sheets-Sheet 2

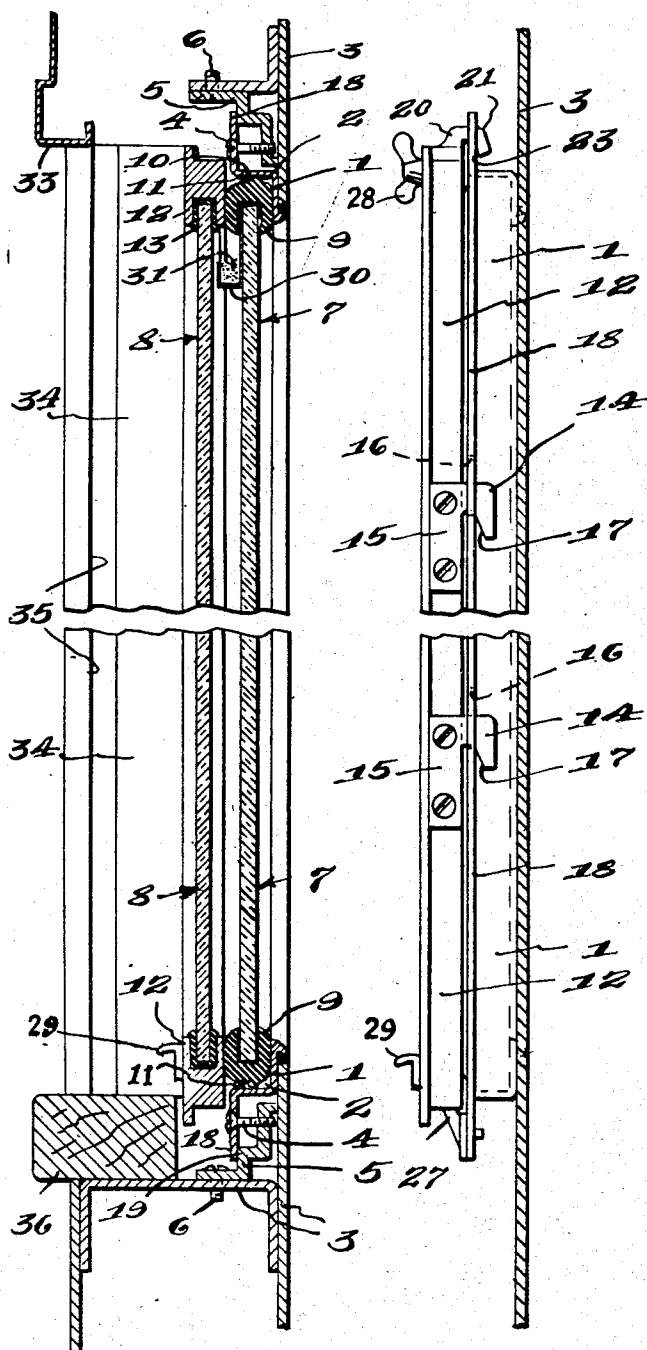


Fig-3- Fig-4-

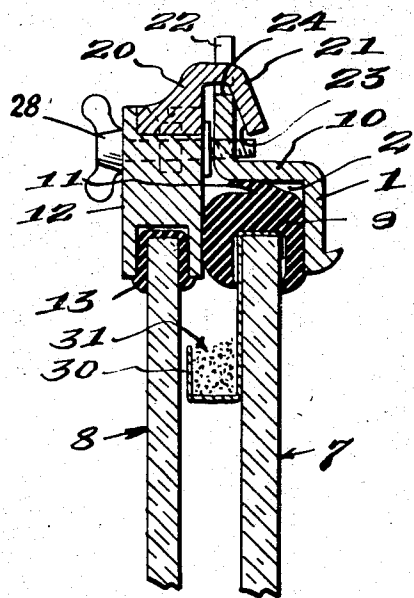


Fig-5

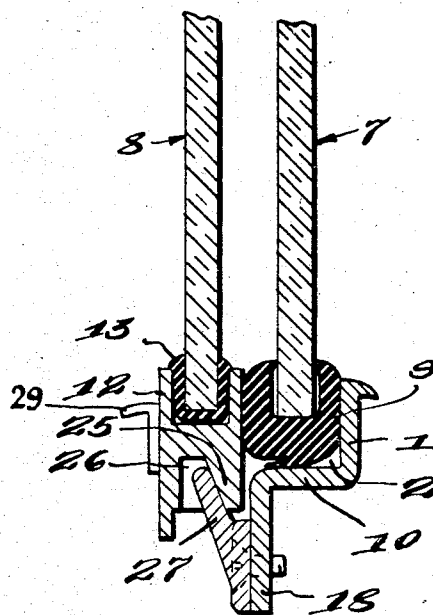


Fig-6-

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UNITED STATES PATENT OFFICE

2,167,974

WINDOW CONSTRUCTION

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Application March 4, 1938, Serial No. 193,971

2 Claims. (Cl. 189-64)

This invention relates to window constructions, particularly for railway cars or other vehicles, and particularly to double windows mounted with an air space between them for air conditioned cars or vehicles or other structures, and has for its object a window construction by which a single tirelike cushioning and sealing member between one of the window closures or the panel thereof and the window frame serves to cushion both closures of a double closure, and also to seal the joint between the closures or panels.

It further has for its object a particularly simple and efficient construction by which one of the closures is mounted in the window frame and held therein by the other closure clamped against it so that when the latter closure is removed, either for the purpose of washing the windows or replacing the glass, the other closure may also be removed, if desired.

It further has for its object a simple cam means by which the removable closure is held in position, and said cam means operable upon movement of the removable closure vertically or in a direction parallel to the plane of the closures.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary elevation, partly in section, of a window structure embodying this invention.

Figure 2 is an enlarged sectional view taken on line 2-2, Figure 1.

Figure 3 is an enlarged sectional view taken on line 3-3, Figure 1.

Figure 4 is an edge view of the demountable closure or sash and contiguous parts illustrating the cam means for securing the closure or sash in position.

Figures 5 and 6 are enlarged sectional views taken respectively on lines 5-5 and 6-6, Figure 1.

1 designates a frame confining the window opening, this being formed to provide a channel 2 angular in cross-section. This window frame is mounted in any suitable manner in the body 3 of the car or vehicle structure.

The window frame 1 is here shown as a separate part from the car structure and secured thereto as by screws 4 threading into strips or brackets 5 secured, as by screws 6, to the body.

7 and 8 designate generally window closures,

each including a glass panel and circumferential frame members, the closure 7 being to the outer side of the car body, and the closure 8 on the inner side. The closure 7 includes a circumferential tirelike member 9 of compressible resilient material, as rubber, coacting with the bottom 10 of the channel 2 and with the side wall of the angular channel. The tirelike member 9 is here shown, and preferably, as mounted directly upon the margin of the glass panel and in effect constitutes a sash frame. It is shown as formed with a circumferential flange or lip 11 for coacting with the bottom 10 of the channel. This lip 11 is for the purpose of compensating for variations in the size of the pane or the window opening and operates to frictionally hold the closure or panel 7 in the channel, when the closure 8 is removed. The closure 8 is here shown as including a sash frame 12 having a groove for receiving the margin of the glass panel, a suitable packing and sealing strip 13 of rubber being interposed between the margin of the glass and the walls of the groove. The frame 12 compresses against the opposite side of the tirelike member 9 to that side engaged with the side wall of the channel 2 of the window frame.

The means for clamping the closure 8 or the frame 12 thereof against the tirelike member includes cam means on the frame 12 and the window frame 1 and operating to clamp or wedge the frame 12 against the tirelike member 9 upon movement of the sash 12 in a direction parallel to the plane of the closures 7 or 8. The clamping means includes two sets of elements, one set being provided on the sash frame 12 at spaced apart points circumferentially around the same, and the other set being mounted on the window frame, and one set having wedge surfaces inclined relatively to the plane of the closures or panels and coacting with the other set, as the closure 8 is moved in a direction parallel to the planes of the closures 7, 8 of the window.

In the illustrated embodiment of the invention, the sash 12 is provided at the edges of the stiles or uprights thereof with cam elements 14 including base plates 15 secured to the edge of the stiles or uprights of the sash 12 and hook-shaped cam portion extending toward the frame 1 and coacting with keeper on the frame 1. As shown, the hook-shaped portions extend through slots or openings 16 in the frame 1, the hook-shaped portions being provided with inclined or cam faces 17 coacting with the lower end walls of the slots with a camming action, these end walls being the keepers.

The sash 12 is of greater height and width than the closure 7 and the elements 14 are located beyond the edge of the closure 7 and the tirelike member 9 thereon. The slots 16 are formed in a flange 18 extending outwardly from the bottom of the flange 2 and pressing at 19 against a step or shoulder on the bracket 5. The screw 4 extends through the flange 18.

The top rail of the sash 12 is provided with cam elements 20 spaced apart on the upper edge thereof and having hook-shaped portions 21 for entering notches or slots 22. The hook-shaped part 21 is formed with an inclined or cam surface 23 for coacting with the keepers or bottoms 24 of the notches 22. The bottom rail of the sash 12 is provided with hook-shaped elements 25 formed by providing the bottom rail with a lengthwise recess 26, these elements 25 coacting with hook-shaped elements or keepers 27 secured to the flange 18. Both the surfaces of the element 25 and the hook-shaped part 27 are formed wedge or cam shaped.

In operation, assuming the inner or movable closure is placed in position by first passing the hook-shaped element 21 through the notches 22 while the sash is held in slightly inclined position; then swinging the sash 12 into a position parallel with the closure 7 and then pushing down on the sash 12 or letting it drop, thus engaging the elements 15, 20 and 27 with the slots 16, 22 and hook-shaped parts 26 on the frame 1. Owing to the inclined surfaces 17, 23, 27, the closure 8, or the sash 12 thereof, is pressed against the tirelike member 9. The slots 16, 22 are wider than the hook-shaped parts 14 and 21. Thus, when the sash 12 is firmly clamped against the tirelike member, it is in sealed relation thereto, so that the space between the panels is sealed and also the tirelike member acts as a cushion for the closure 8 as well as for the closure 7.

Suitable fastening means, as a screw 28, may be provided for holding the sash 12 from working loose under vibration of the vehicle, and also a suitable handle 29 may be provided along the rail of the sash 12 for assisting in demounting it. Also, if desired, after the sash 12 has been lifted to disengage the hook-shaped parts 14 and 23 from the notches 22 and slots 16, the lower end may be tilted outwardly slightly and then again dropped to again engage the hook-shaped parts

23 with the bottom walls of the notches 22 so that the hook-shaped parts 23 then act as hinges-leaves to permit the sash 12 to be swung inwardly with the hook-shaped parts 23 serving as hinges.

A suitable container 30 for a moisture-absorbing material, as activated alumina 31, may be placed between the closures 7 and 8 or the glass panels thereof. The edge of the sash 12 runs close to the interior trim of the car body, the upper edge terminating adjacent a rail 33 along the top of the window opening of the car structure, the side edges terminating close to uprights 34, those here shown being formed with curtain guides 35 and the lower edge extending behind the sill 36. The lifting force applied to the sash 12 to get the lower rail clear of the sill disengages the cam elements, which clamp the inner closure 8 against the tirelike member 9 of the outer closure.

What I claim is:

1. The combination with a window frame formed with a window opening; of a pair of parallel closures mounted relatively to each other to have an air space between them, one of said closures including a circumferential tirelike member of compressible material coacting with the walls of said opening and the other of said closures located out of said opening and having a marginal frame for pressing against the tirelike member in the opening, and means for clamping the latter closure directly against the tirelike member, whereby the tirelike member provides a cushion for both closures and seals the air space between the closures and said latter closure is free of the frame around its peripheral edge face.

2. The combination with a window frame having a window opening in the form of an angular channel formed by a bottom wall and one side wall; of a closure including a panel and a circumferential tirelike member of compressible resilient material coacting with the bottom and pressing at one side against the side wall of the channel, a second closure located outside of said channel and including a panel and a circumferential frame pressing against the opposite side of the tirelike member, and means for clamping the second closure against said tirelike member.

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