Dec. 31, 1935. R. H. IMHOFE 2,026,175

WINDOW CONSTRUCTION

Filed May 31, 1934

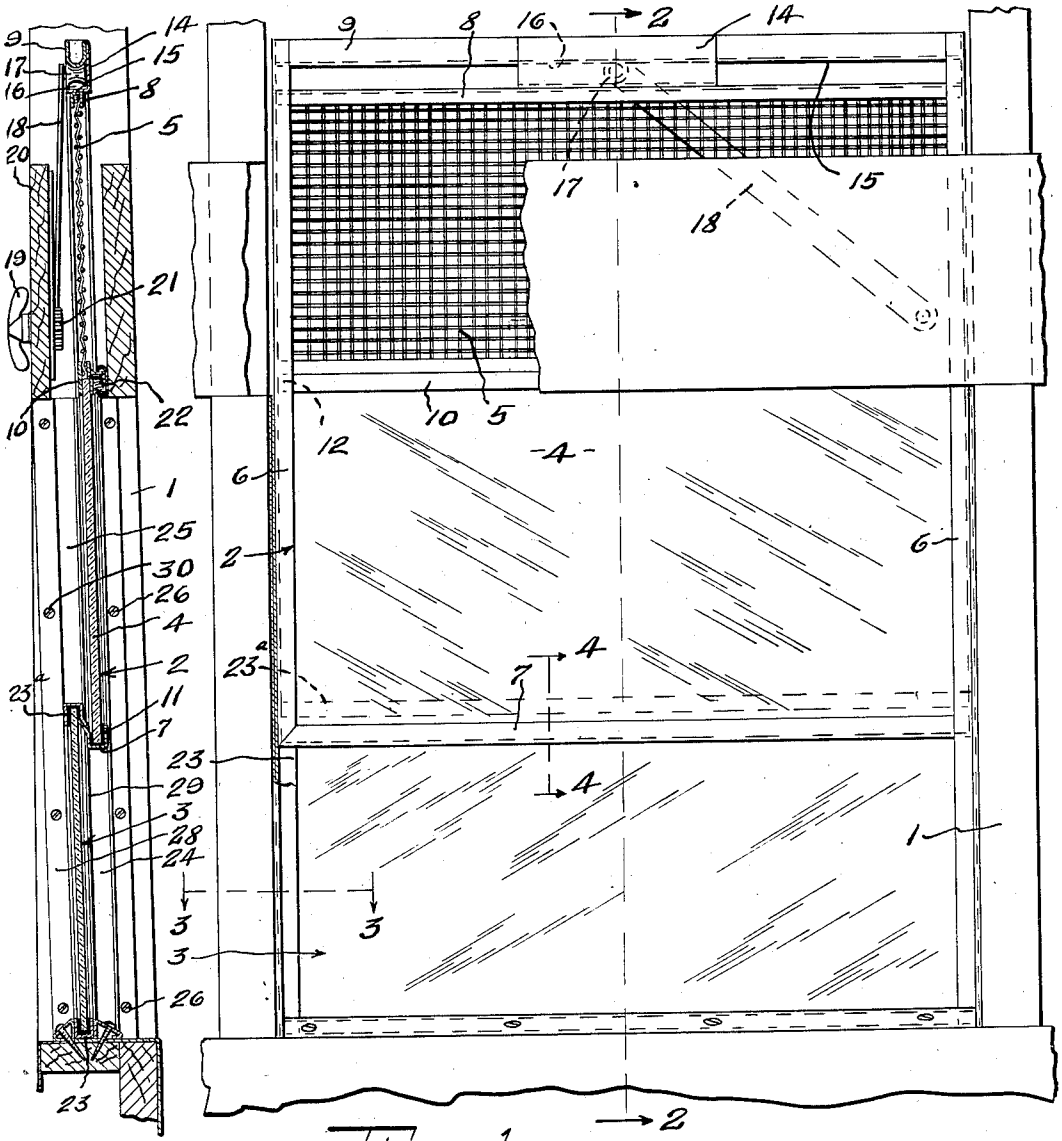


Fig. 1

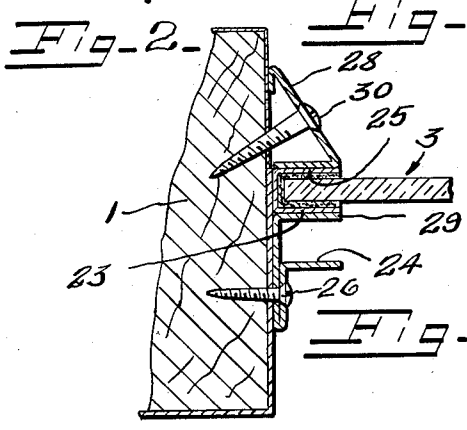


Fig. 2

Fig. 3

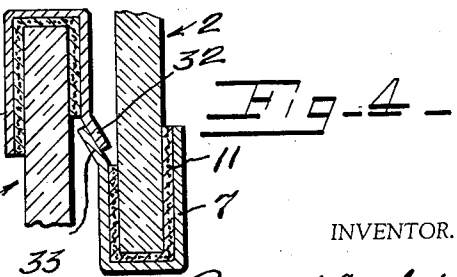


Fig. 4

INVENTOR.

BY Robert H. Imhofe
Bradell & Thompson
ATTORNEYS.

Patented Dec. 31, 1935 2,026,175

UNITED STATES PATENT OFFICE

2,026,175

WINDOW CONSTRUCTION

Robert H. Imhofe, Canastota, N. Y., assignor to Rex-Watson Corporation, Canastota, N. Y., a corporation of New York

Application May 31, 1934, Serial No. 728,208

2 Claims. (Cl. 189—72)

This invention relates to window structures, and particularly to sash structures, and has for its object a particularly simple and economical sash structure for motor vehicles, and more especially for what are commonly known as school buses.

It further has for its object a sash frame which is capable of being raised and lowered and including a glass portion and a screen portion which move as a unit so that when the sash is open, the screen occupies the portion previously occupied by the glass.

It further has for its object a sash in which the glass portion and the screen portion have a sash frame in common, and a particularly simple and economical way of assembling the screen and the glass in a common frame.

It further has for its object a window and sash construction in which a glass and screen are embodied in one frame and the sash raised and lowered by the ordinary raising and lowering mechanism used quite commonly in other forms of motor vehicles, and an arrangement by which this common form of raising and lowering means is readily applied to the sashes embodying a screen.

It further has for its object a double sash window and a particularly simple and efficient means at the lapping rails of the sashes for making them tight when the sashes are closed.

It further has for its object an extremely simple and economical structure for providing the channels in which the sashes of a double sash window are mounted.

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 drawing in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary elevation of a window structure embodying my invention.

Figures 2, 3 and 4 are respectively sectional views on line 2—2, 3—3, and 4—4, Figure 1.

1 designates the window frame generally; 2 and 3 upper and lower sashes of a double sash mounted in the frame. In the illustrated embodiment of my invention, the lower sash 2 is stationary, that is, it is not intended to be raised and lowered or opened, and the upper sash 2 is capable of having a lowering and raising movement to open and close the window. The upper sash includes a glass pane 4 and a screen or grill 5, these being mounted in the common sash frame with the screen or grill 5 located in the same plane as the pane of glass 4.

The frame of the upper sash comprises stiles 6 which are U-shaped in general form in cross section, a lower rail 7, upper rail 8, an extreme top rail 9 and an intermediate transverse member or rail 10. The glass pane 4 fits at its edges in channels of the stiles 6 and the lower rail 7. The channels of the stiles 6 and rail 7 are provided with a suitable lining 11 of yielding material in which the margins of the glass pane are seated.

The intermediate rail 10 is fitted at its ends at 12 into the channels of the stile 6 and includes opposing strips lapping the adjacent margins of the pane 4 and grill 5 forming oppositely facing channels, one of which receives the upper margin of the pane 4 and the other, the lower margin of the grill 5. These strips are secured, as by welding, or in any other suitable manner in the channel of the stile 6 and they also may be secured by soldering or welding or some analogous operation, to the grill 5, so that the portions of the intermediate transverse member between the stiles are held from separating. The upper rail 8 is channel-shaped with its ends fitting into the channels of the stile 6 and secured therein by welding or any other suitable manner, and the upper margin of the screen is secured in the channel of the rail 8 in any suitable manner. The side margins of the grill 5 extend into the channels of the stiles 6.

The extreme top rail 9 is a transverse bar formed up of sheet metal, here shown as U-shaped in cross section with its ends extending into the channels of the stiles 6 at the upper ends thereof and secured therein in any suitable manner. The sash is lowered and raised by mechanism including a part 14 L-shaped in general form with the base 15 of the L lapping the upper side of the upper rail 8 and secured thereto, and the leg of the L lapping one side of the top rail 9 and secured thereto, the base of the L formation being spaced apart from the top rail 9 forming a groove 16. This groove is for the purpose of receiving another part, as a roller or follower 17, of the raising and lowering mechanism.

The raising and lowering mechanism may be of any suitable form, size and construction and per se, forms no part of this invention. That partly illustrated herein includes a swinging arm 18 at the upper end of which is carried the roller 17, the arm being operated to rock about its axis by means of a knob or finger-piece 19 mounted on the rock shaft, which in turn is mounted in

suitable bearings in the inner trim 20 of the car structure, and a pinion 21 mounted on the inner end of the rock shaft and through suitable mechanism operating to swing the arm 18 when the handle 19 is turned. Owing to the construction of the sash frame and the assembly of the part 14 therein, the standard raising and lowering mechanism is applied in a simple and economical manner to a sash which includes a glass pane and a grill.

A suitable weather strip 22 coacts with the upper sash to make it weather tight at its upper edge when closed. The lower sash 2 is provided with a marginal frame 23 which includes a U-shaped channel in which the margin of the pane is received.

The window frame is provided with a double channel in which the sashes 2, 3 are mounted, the lower sash being stationary, and the upper sash 2, as before stated, being capable of being raised and lowered.

24 and 25 designate respectively the channels for the sashes and these channels are provided on the window frame in an extremely simple and economical manner as follows: The channel 24 is formed up from a sheet metal strip to provide the U-shaped channel 24 and an angular flange in line with the bottom of the U formation by means of which flange the strip is secured to the window frame in any suitable manner as by screws 26. The channel 25 is provided by a removable strip 28 here shown as bent up from sheet metal in the general form of a right angle triangle with the altitude side of the triangle opposed to the side 29 of the channel 24 and spaced therefrom to form the channel 25, and the strip 28 is secured to the window frame structure by screws 30 extending through the hypotenuse side of the triangle formation into the window frame. The lower rail of the lower sash fits into a channel along the sill of the window frame, which channel is of the same formation as that shown in Figure 3.

In order to make the upper and lower sashes weather tight with each other when closed, the top rail 23a of the lower sash 3 and the bottom rail of the upper sash, these rails being U-shaped in general form in cross section, are provided on their opposing sides with outwardly inclined flanges 32, 33, which engage incline plane or wedging fashion, when the upper sash is closed.

In certain types of buses, as for instance, school buses, the equipment must be economical in construction but at the same time of high quality. Also, it is requisite in school buses that the windows be capable of being opened, but the ordinary sashes which might fall on the arms of the school children and injure them are prohibited, and also a window, when open, must be protected by a screen to prevent the children from sticking their heads and arms out of the window, throwing books, hats, etc. out of the window.

This construction fulfills all of these requirements.

What I claim is:

1. In a window structure, the combination with a window frame, of a sash capable of moving in the frame to open and close the window, the sash including a frame, a glass portion and a screen portion mounted in the sash frame, the sash frame including stiles, top and bottom rails and an intermediate transverse member and an upper rail near the top rail, the stiles being channel-shaped in cross section, and the bottom rail and the intermediate transverse member being channel-shaped in cross section, the intermediate member being formed with two channels facing in opposite directions, the glass having its margins seated in the channels of the stiles, the bottom rail and one of the channels of the intermediate member, and the screen having its margins secured in the channels of the stiles, the upper rail, and the other channel of the intermediate member, said intermediate member and said upper rail in which the screen is secured, having their end portions extending into the channels of the stiles, and means for operating the sash frame including a part secured to the top rail and the upper rail, all whereby the glass, intermediate member, screen and upper rail and top rail can be assembled between the stiles, from the upper end of the sash frame.

2. In a window structure, the combination of a window frame, of a sash capable of movement in the frame to open and close the window, the sash including a frame, a glass portion and a screen portion, the sash frame including an intermediate transverse rail formed of sheet metal and channel-shaped in cross section, and also top and bottom rails, the channel receiving the margin of a glass pane, said intermediate transverse rail having means for securing the margin of the screen thereto substantially in the plane of the glass pane, the stiles and top and bottom rails of the sash frame also having channels for receiving the contiguous portions of the glass pane and the screen, and operating means for raising and lowering the sash frame, and hence raising and lowering the glass pane and screen, as a unit.

ROBERT H. IMHOFE.