June 11, 1940. R. T. AXE 2,204,464

SASH HOLDER MECHANISM

Filed Feb. 23, 1937 3 Sheets-Sheet 1

Fig-1

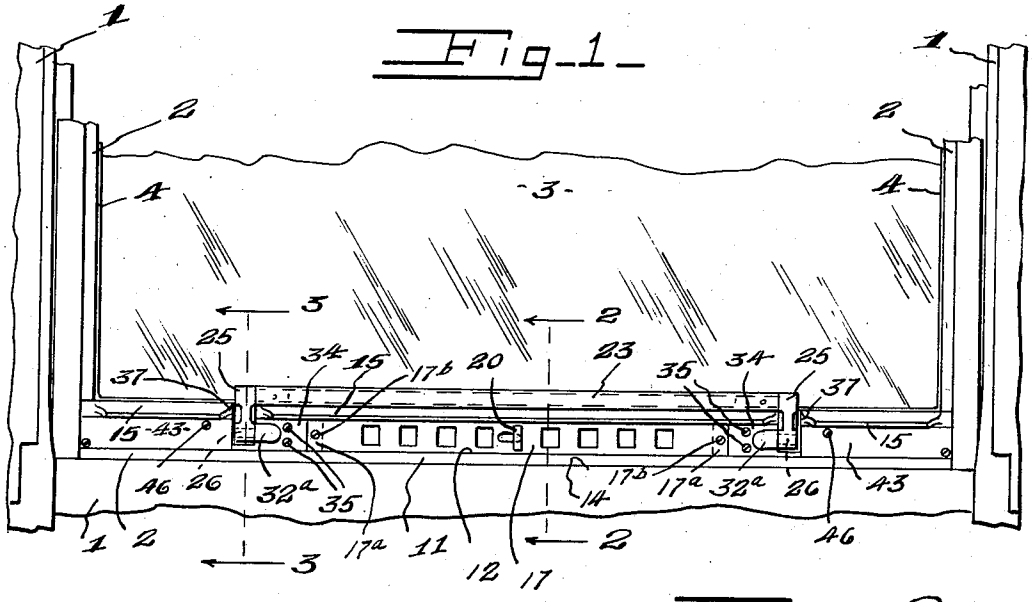


Fig-2

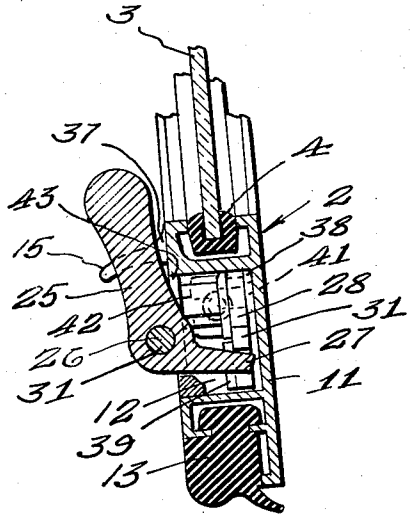
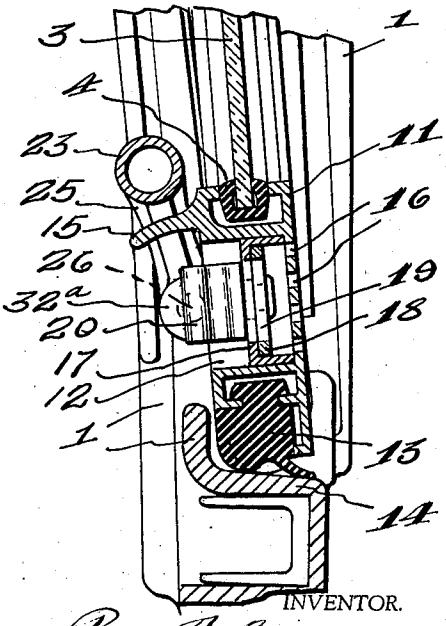


Fig-3



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SASH HOLDER MECHANISM

Filed Feb. 23, 1937 3 Sheets-Sheet 2

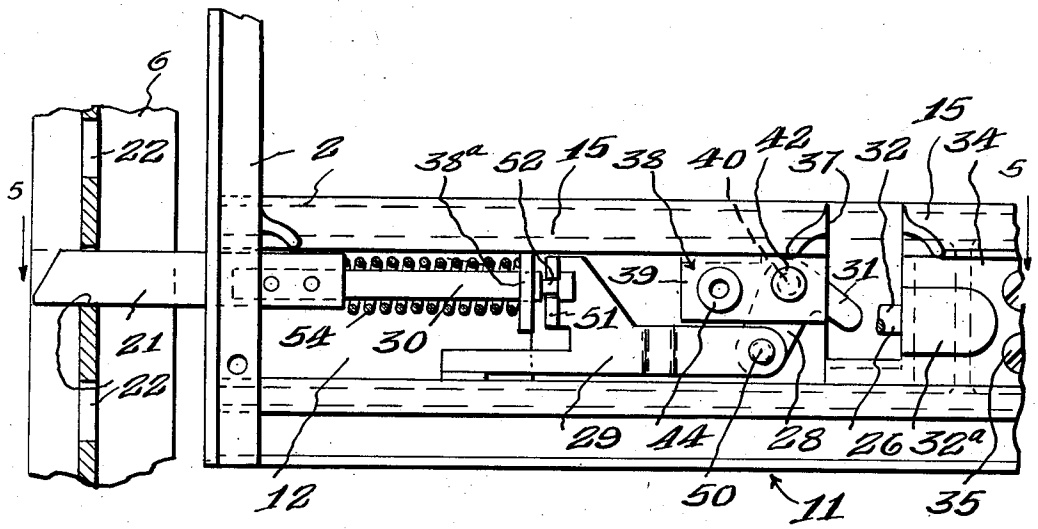


Fig-4-

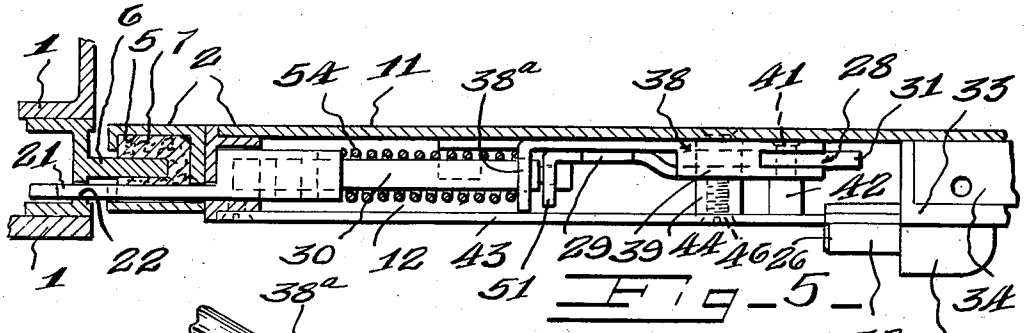


Fig-5-

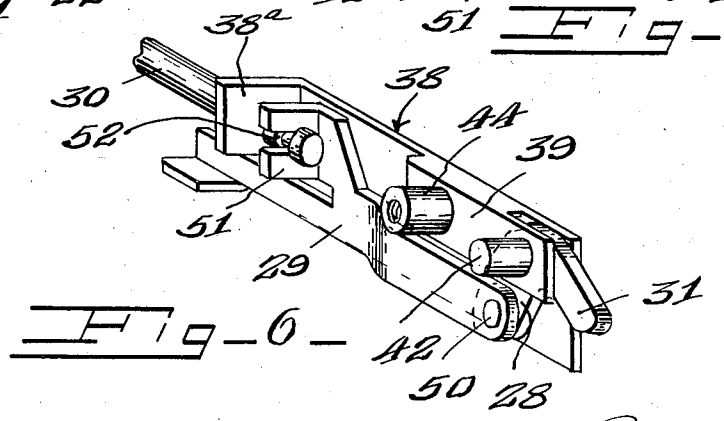


Fig-6-

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SASH HOLDER MECHANISM

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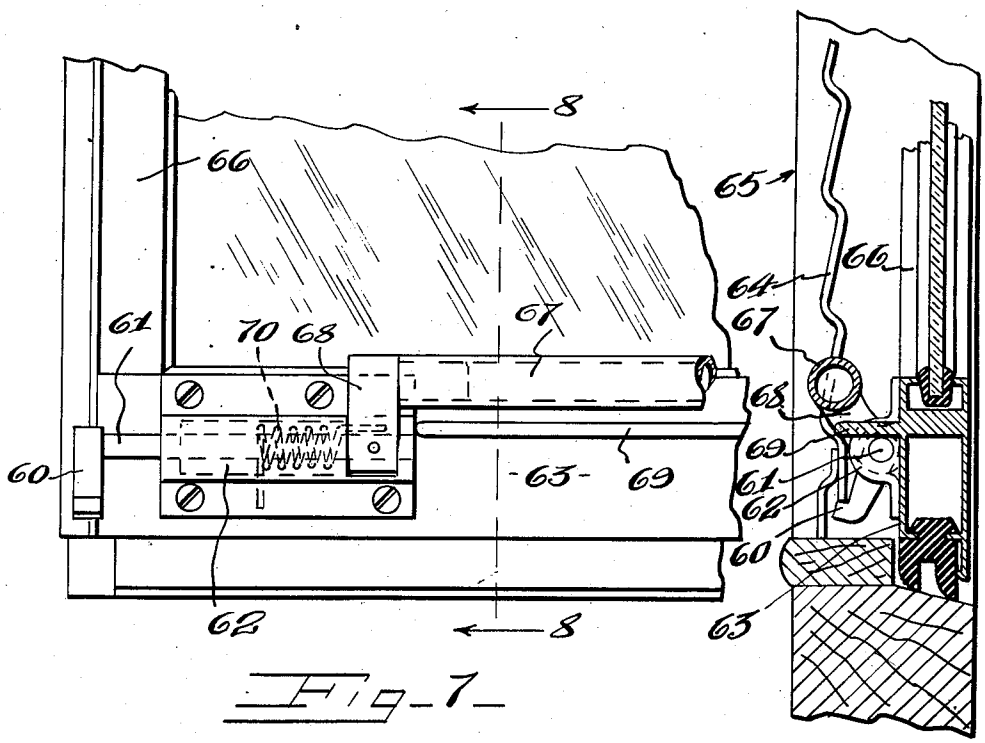


Fig. 7

Fig. 8

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UNITED STATES PATENT OFFICE

2,204,464

SASH HOLDER MECHANISM

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Application February 23, 1937, Serial No. 127,138

1 Claim. (Cl. 292—36)

This invention relates to window constructions in which a window sash has an opening and closing movement, as a raising and lowering movement, and particularly to sash holders for holding the sash closed or in various open positions, and the assembly of the sash holders in the sash frame.

It has for its object to provide an operating member or bar for the sash holders located at opposite sides of the sash, the operating member extending the greater part of the width of the sash and operable by the hand or hands used in lifting the sash at any point throughout the width of the sash, and so mounted as to be held from any movement, except a bodily movement laterally relative to the lengthwise dimension of the bar.

It further has for its object an operating bar extending the greater part of the width of the sash or length of a rail, as the bottom rail of the sash, and arranged in juxtaposition to, or in pinch-handle relation to, a stationary lift handle extending the greater part of the width of the sash or the greater part of the length of the bottom rail.

It further has for its object a particularly simple construction and arrangement of motion transmitting mechanism between the operating bar and locking members or bolts of the sash holder mechanism, and the assembly thereof in the bottom rail of the sash.

It further has for its object the construction of transverse or bottom rail and the assembly of the sash holder mechanism and operating bar therein and also the construction of the transverse or bottom rail embodying a ventilator and operating member or bar extending the greater part of the length of the rail and located so as not to interfere with the ventilator or ventilator passages.

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 of a window structure embodying this invention.

Figures 2 and 3 are sectional views on lines 2—2 and 3—3, Figure 1.

Figure 4 is an enlarged fragmentary elevation of the bottom rail and the assembly of the sash holder mechanism therein, the cover for the channel being removed.

Figure 5 is a sectional view on line 5—5, Figure 4.

Figure 6 is an isometric view of the sash holder mechanism.

Figure 7 is a fragmentary elevation of a sash showing a different type of sash holder from that shown in Figures 1 and 4.

Figure 8 is a sectional view on line 8—8, Figure 7, the contiguous portion of the window frame and rack with which the locking member of the sash holder coacts being also shown.

This invention comprises generally sash holders located at opposite sides of a sash which has an opening and closing movement, and an operating bar common to both of said sash holder mechanisms extending the greater part of the width of the sash, preferably along the transverse rail of the sash, as the bottom rail on the outside thereof in contradistinction to within the same, locking members carried by the sash and coacting with means on the window frame for holding the sash closed and at different elevations, the operating bar having a movement in a direction lateral relative to the length of the bar itself, that is practically a rectilinear movement, and motion transmitting means between the bar and the locking members. The operating bar is arranged in juxtaposition to, or in pinch-handle relation to, a lift handle which extends the greater part of the width of the sash or length of the bottom rail.

The bottom rail is formed up of metal to have a lengthwise channel extending the full length thereof and with the bottom of the channel on the outer side of the sash. The sash holder mechanism is located in the end portions of the channel, and the intermediate portion of the channel is provided with a ventilator, the bottom of the channel being formed with the ventilating openings.

1 designates the window frame which confines a window opening. 2 designates the sash, which is capable of having a raising and lowering movement in the frame 1, the window frame and the sash being formed with interfitting sash guides. The stiles and rails of the sash are here shown as formed of metal and shaped to receive the margins of the glass pane 3 with a suitable glazing strip or packing 4 around the margins of the glass pane.

The window here illustrated is particularly designed for vehicles, as buses, wherein the window, when raised, moves in an inclined or arcuate path or a sash having a movement as shown in

my patent application Serial No. 74,334, filed April 14, 1936.

As seen in Figure 5, the stiles of the sash 2 are formed with channels 5 which receive ribs 6 provided on the frame 1 and a suitable fibrous weather strip 7 U-shaped in general form is located in the channel and embraces the rib and holds the sash and the frame out of metal-to-metal running contact.

The window frame structure, in so far as this invention is concerned, may be of any suitable construction.

The bottom rail 11 of the sash is metal and preferably extruded metal, and is formed with a channel 12 extending the full length thereof and opening through the inner side of the rail, that is, the side toward the interior of the vehicle, with the bottom of the channel toward the outside of the vehicle. The bottom rail 11 is also formed with a channel in its upper side to receive the margin of the glass pane and the mounting therefor and on its lower side with a channel for receiving a weather or buffer strip 13 for coacting with the sill 14 of the window frame. The bottom rail is also formed with a stationary lift handle 15 extending the greater part of the width of the sash or the length of the bottom rail, this lift handle projecting from the upper portion of the bottom rail above the channel 12. It is interrupted or formed with slots for the operating bar, as will be hereinafter described. The bottom of the channel 12 is formed with ventilator openings 16 and a ventilator box 17 is mounted in the intermediate portion of the channel opposite said openings, this box also having ventilating openings in its bottom. A closure or slide 18 is mounted in the box, this having openings 19, movable into and out of register with the ventilator openings in the bottom of the box. The slide or closure 18 is provided with a suitable handle 20 located in the channel.

The sash holder mechanism includes locking members 21 shown in Figure 4 as sliding bolts movable edgewise relatively to the sash beyond the edges thereof and coacting with suitable means, as openings 22, in the window frame 1, an operating bar 23 carried by the bottom rail and extending the greater part of the length thereof, this being here shown as pivotally connected on the lower rail with the pivotal axis eccentric to the bar, and motion transmitting mechanism for transferring the movement of the bar to the members 21. The bar 23 is here shown as carried at the ends of the arms 25 which are pivotally connected at 26 to the lower rail. These rocker arms have lever arms 27 extending into the channel 12 for coacting with the motion transmitting means located in the channel. The bar is thus held from tilting about any transverse axis between the ends thereof and held from all other movements, except an up and down, swinging movement in a vertical direction.

The motion transmitting means between each end of the operating bar 23 and each member 21 consists of an angle or bell crank lever 28, one for each lever arm 27, a slide 29 operated by each angle lever and connected to the corresponding member 21 through an endwisely movable rod 30. Each lever arm 27 extends at a right angle to the arms 31 of the angle lever 28 in order to engage and actuate the lever 28, when the operating bar 23 is actuated. The arms 25 of the operating bar 23 are mounted on studs 32 projecting from bosses 32a provided on blocks or carriers 33 fitting into the end portions of the channel 12. The carriers 33 are secured to a filler block 34 in the channel, the parts being held assembled, as by screws 35. The ventilator box 17 is located between the filler blocks 34 in the opposite end portions of the channel 12 and the bottom of the ventilator box 17 is provided with lugs 17a secured, as by screws 17b, to the channel blocks. The operating bar 23 is here shown as located above the lift handle 15 in pinch-handle relation thereto, and the arms 25 extend through slots or interruptions 37 in the lift handle 15.

The operating bar 23 is preferably arranged above the lift handle, in order that the operator in raising the window may release the bar to release the bolts, when the window has reached the desired height, in order that, after the bar is operated, the sash raised by means of the lift handle, the operator may release the bar, and after the sash is lifted slightly, the bar may be released during continued lifting until the locking bolts are free to ratchet into openings 22 in the window frame. The bar and lift handle are located so as not to interfere with the operation of the ventilator.

The angle lever 28 is mounted in a carriage 38 fitted in each end portion of the channel 12. This carriage is formed up of sheet metal having one portion folded upon itself at 39 to provide a space in which the lever 28 is mounted. The lever is pivoted at 40 to the double wall portion 39 by a pin or rivet 41. This has a head 42 within the channel which serves as a spacer between the carriage and a cover plate 43 for the portion of the channel housing the bolt, and motion transmitting mechanism. The carriage 38 is secured in position by a rivet or fastening member 44 extending through the double wall portion 39 and through the bottom of the channel 12. The carriage 38 slidably fits on the rivet 44 so that it is readily demountable when the cover plate 43 is removed. A screw 46 extends through the cover plate 43 and axially into the rivet 44 to hold the cover plate in position. The spacer 42 holds the carriage 38 from displacement axially of the rivet 44. The carriage 38 is also formed with an angular portion 38a having a passage through which the rod 30 slides.

The slide 29 is formed up of sheet metal to slide in the end portion of the channel 12 and is pivoted at 50 to the lever 28. It is provided with a lug or fork 51 working in a groove 52 in the rod 30 which is fixed to the member 21. A retracting spring 54 is interposed between the inner end of each member 21 and the angular portion 38a of the carriage 38. Obviously, upon pinching of the bar 23 toward the lift handle 15, the members 21 will be retracted inwardly through the angle lever 28, slides 29 and rods 30, and, upon the release of the bar 23, the springs 54 will re-act, so that the members 21 can enter holes 22 in the window frame when the members become alined therewith.

As seen in Figures 7 and 8, the locking members, instead of being sliding bolts shiftable in a direction edgewise of the sash, are rocking bolts or latches movable about a horizontal axis extending lengthwise of the bottom rail and coacting with a rack mounted on the window frame and facing the stiles of the sash. In Figures 7 and 8, 60 designates the rocking locking member or latch, this being mounted on a rock shaft 61 mounted in a casing 62 at each end of the bottom rail 63 of the sash. The latch 60 coacts with a rack 65 carried by the window frame 65 and confronting the inner sides of the stiles 66

of the sash. 67 is the operating bar, the arms 68 of which are mounted on and keyed to the inner ends of the rock shafts 61, the bar 67 and arms 68 corresponding to the bar 23 and arms 25 (Figures 1 and 2). 69 is the pinch-handle on the lower rail, corresponding to the pinch-handle 15 (Figures 1, 2 and 3). The operation of the bar 67 and the latches 60 is against the action of returning springs 70 acting on the rock shafts 61. Movement of the bar 67 about the axis of the rock shaft 61 rocks said shafts 61 to withdraw the latches 60 from the racks 64. The shafts 61 constitute the motion transmitting means between the operating bar 67 and the latches 60.

This sash holder mechanism is particularly designed for wide windows and owing to its construction and arrangement, the wide window sash can be readily raised and lowered by pressure applied at any point throughout the length of the lift handle 15, and the bar 23 or 67 may be operated throughout the length of the lift handle 15. Owing to the bottom rail construction, the lock mechanism, with the exception of the operating bar and associated part, is located entirely within the narrow thickness of the metal and lock mechanism, so operable throughout practically the entire width of the sash, does not interfere with the ventilator mechanism located within the bottom rail.

What I claim is:

A sash holding mechanism for a window sash including a transverse rail slidable in the window frame, comprising a movable operating bar extending lengthwise of the rail the greater part of the width of the sash and being shiftable bodily relative to the rail, the operating bar being pivoted at spaced apart points to the rail on an axis eccentric and parallel to the longitudinal axis of the bar, the bar being entirely outside of the rail, where it is accessible throughout a substantial portion of the width of the sash for operating movement, locking members carried by the sash and coacting with the frame, said members having an operating movement in a direction edgewise of the sash, and motion transmitting means for transmitting the pivotal movement of the bar to the locking members, the rail having a pinch-handle extending lengthwise of the bar and arranged in juxtaposition thereto, the transverse bar being located above the pinch-handle, and the pivotal axis thereof being located below the pinch-handle.

ROY T. AXE.