Dec. 14, 1937. W. J. ZEEB ET AL 2,102,250

RELEASABLE WINDOW

Filed March 12, 1936 2 Sheets-Sheet 1

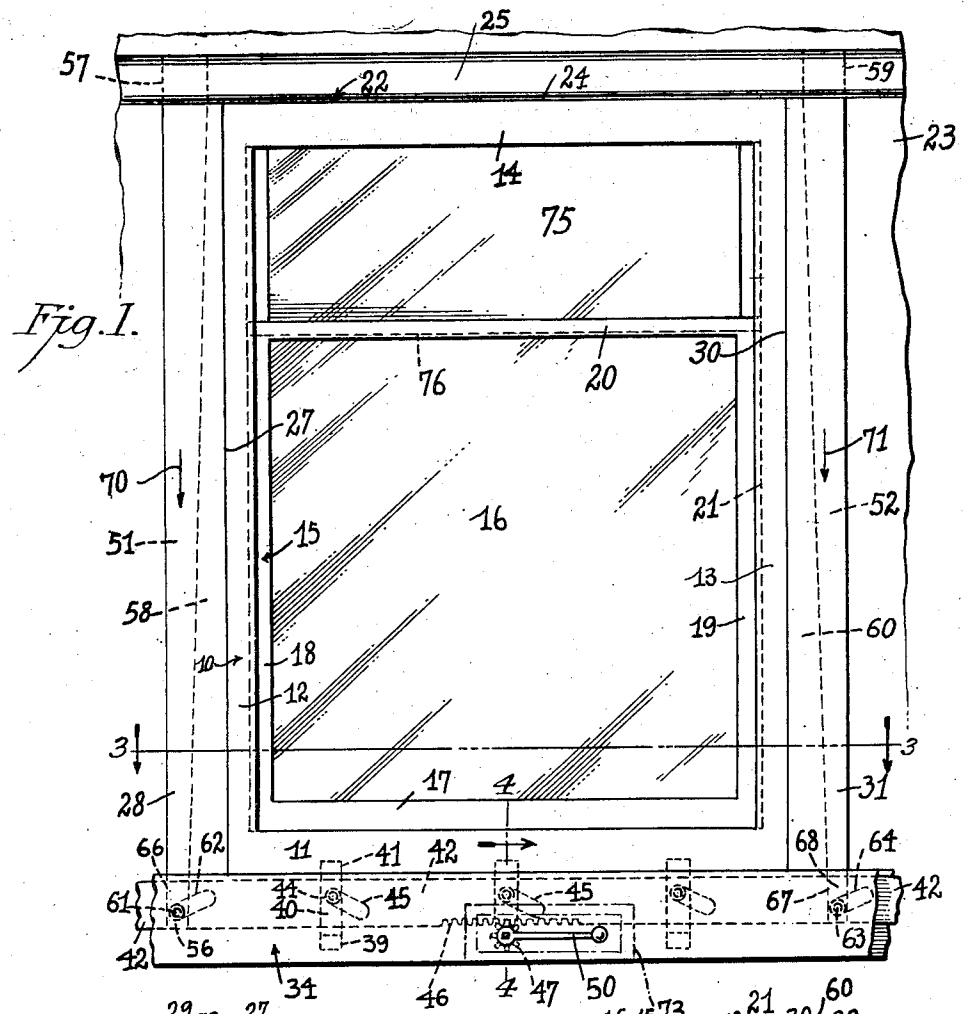


Fig. 1.

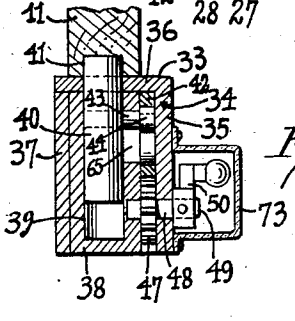


Fig. 4.

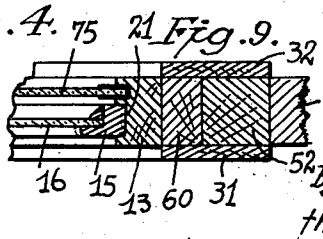


Fig. 9.

Fig. 3.

WILLIAM J. ZEEB,
JOHN T. DAMMES AND
ALFRED C. MORRIS
Inventors.

By: Julian J. Wittal,
their Attorney.

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Fig. 2.

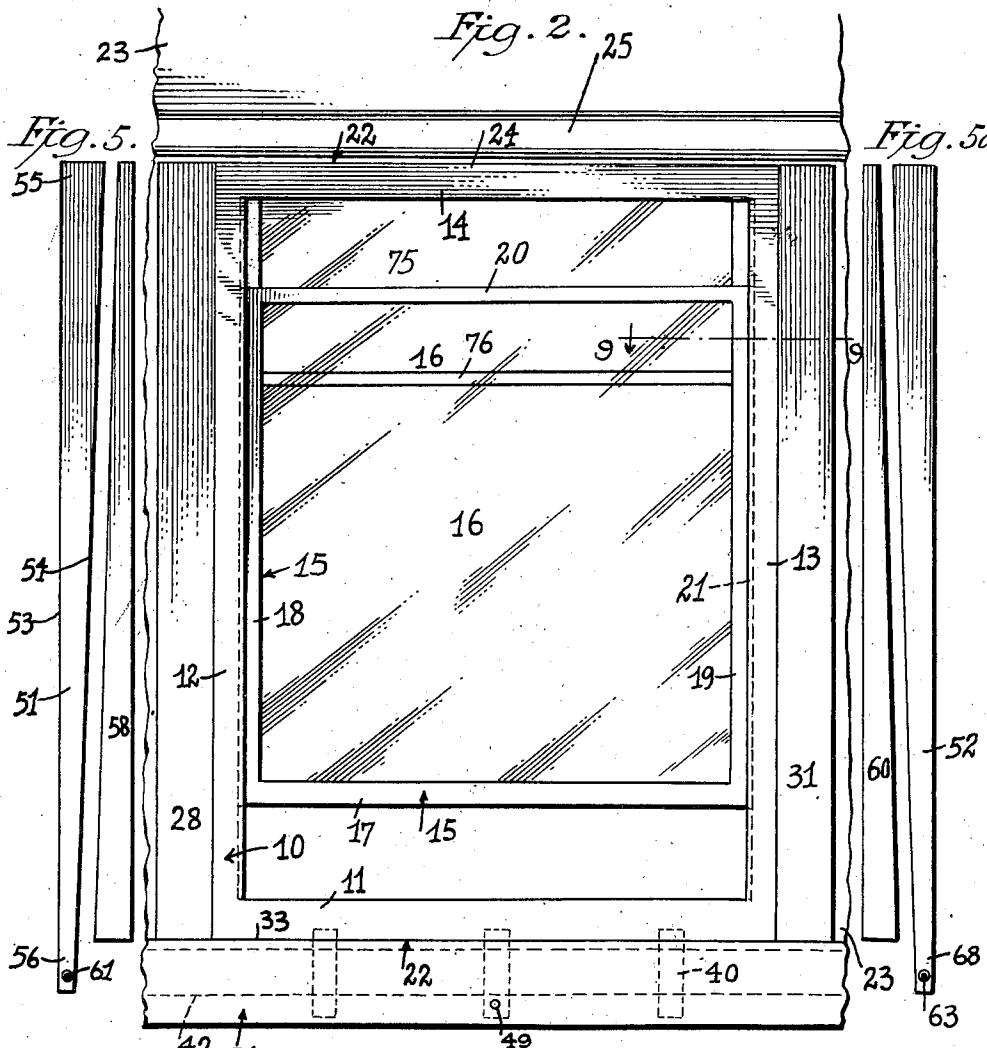
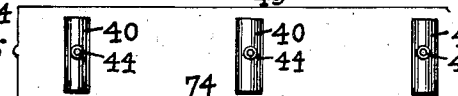


Fig. 5.

Fig. 5a.

Fig. 6



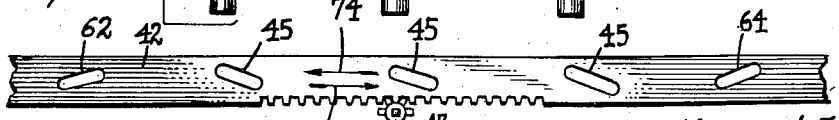


Fig. 7.

Fig. 8.

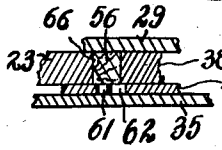


Fig 10

WILLIAM J. ZEEB,
JOHN T. DAMMES,
AND ALFRED C. MORRIS,
Inventors,

by Julian J. Wittal,
their Attorney.

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UNITED STATES PATENT OFFICE

2,102,250

RELEASABLE WINDOW

William J. Zeeb, New York, John T. Dammes, Brooklyn, and Alfred C. Morris, New York, N. Y., assignors to Emergency Window and Exit Devices Corporation, New York, N. Y.

Application March 12, 1936, Serial No. 68,380

12 Claims. (Cl. 20—52.2)

Our invention relates to windows and particularly to windows for vehicles, like busses, automobiles, street cars, railway cars, and has for its main object to provide means whereby in case of an emergency, instant exits for the occupants of the vehicle may be provided through the removal of the windows with their frames.

Another object of this invention is to provide a device of the character mentioned wherein the window frame with a sash and glass pane therein may be removed by a simple, easy and quick movement of one single element.

Still a further object of this invention is to provide a device as characterized hereinbefore, wherein no extra effort or work is needed to remove the window frame after it has been released from the wall of the vehicle, but the slightest pressure either from within vehicle or from the outside thereof will be sufficient to instantly remove the whole window frame with its sash from the wall of the vehicle, either inwardly or outwardly.

It is a well known fact that the present moving vehicles provide only limited emergency exit for the occupants in case of an emergency and numerous serious injuries and losses of life to the persons have happened in cases of accidents, like fire, collision, explosions, the dropping of the vehicle into bodies of water, etc. At present the only way to get additional emergency exit from such a vehicle is to break the windows by some forceful mechanical means, like an ax, or hammer, or by the hands or feet of the occupants themselves. It is obvious that only a limited number of such axes or hammers may be provided within a vehicle, and usually only one is provided at the furthest front portion thereof so that in case of emergency it is not available for breaking more than one or two of the windows nearest to its location. The use of such mechanical means is also slow, awkward and cumbersome, especially in case of a sudden emergency and the confusion accompanying the same; and the breaking by such means, or by the hand or foot of the occupant, is made still more difficult when most vehicles are equipped with shatterproof panes of glass in their windows, as now prescribed by law, making the breaking of them a hard and slow work, and the exit opening dangerous through its ragged edges.

Our invention aims to overcome all these and other dangerous drawbacks and shortcomings of the present moving vehicles and provide an easy and instant exit for the occupants when such a one becomes necessary, as has been pointed out hereinbefore.

Our invention has further aims than those which we pointed out hereinbefore, as will be apparent as the specification of the same proceeds, and among others we may mention: to provide a window frame and particularly a window frame for moving vehicles of the character specified and detailed hereinbefore which will be simple in construction, easy to operate, inexpensive to manufacture and adapted to be installed into existing vehicle bodies without changing their construction to any substantial degree, permitting the use and operation of our windows while they are secured in the wall of the vehicle in a similar manner as the windows now in use in such vehicles are used.

In the drawings forming a part of this specification and accompanying the same:

Fig. 1 is a fragmentary front elevation of a window installed in a vehicle according to our invention;

Fig. 2 is a similar semi-diagrammatical elevation showing the window sash in a partly open position, portions of the mechanism having been removed;

Fig. 3 is a staggered sectional view on the line 3—3 of Fig. 1, portions of the window having been removed, and

Fig. 4 is a sectional elevation of a detail on an enlarged scale, the section being taken on the line 4—4 of Fig. 1;

Figs. 5 and 5(a) are views of parts of left handed and right handed wedge action securing means for our improved window, shown in the position and adjacent to the place of their employment;

Fig. 6 shows the three sliding pins employed in our invention for releasably securing the bottom rail of the frame of our window, while

Figs. 7 and 8 show details of a slotted rack and gear mechanism for moving the parts of said wedge and pin securing means.

Fig. 9 is a sectional detail.

Fig. 10 is another cross sectional detail showing the lower ends of certain wedge members employed in our invention.

Referring now to the drawings more closely by characters of reference, the numeral 10 indicates the frame of our window proper in general having a bottom rail 11, left hand and right hand side rails or stiles 12 and 13, respectively, and top rail 14. Within said frame is, upwardly and downwardly slidably arranged, a window sash 15 carrying the glass pane 16, and having the bottom rail 17, left handed and right handed

side rails or stiles 18 and 19, and top rail 20, the said sash otherwise being generally of the usual construction and sliding in the grooves 21, as will be understood.

The frame 10 is, according to our invention, simply placed into an opening, indicated by the numeral 22 of substantially the same size and shape as the outer circumference of the said frame 10 so that without any further securing means said frame 10 may easily be removed from said opening 22 even by slight pressure, either inwardly or outwardly from the wall 23 of the vehicle. The opening 22 in the vehicle wall will be defined by the lower edge 24 of an upper portion 25 thereof, the inward edges 27 of left hand inner and outer wedge cover plates 28 and 29; the inward edges 30 of right hand inner and outer wedge cover plates 31 and 32, and the top surface 33 of the rack housing or box 34 arranged underneath the window in the wall of the vehicle.

In the embodiment shown in the drawings, said casing for the rack mechanism is formed by an inner plate 35 top plate 36 and outer plate 37 within which is arranged a base member 38. A plurality of holes 39 are provided in the base member 38 housing upwardly and downwardly slidable pins 40 which are adapted to enter into or to be withdrawn from corresponding holes 41 in the bottom rail 11 of the frame 10.

A horizontally slidable rack bar 42 is arranged in the housing or box 34 between the inner side of the base bar 38 and the respective side 35 of said housing 34.

Each pin 40 has an inwardly projecting pin 43 secured thereon with roller 44 at its outer end whereby it may play in an appropriate slot 45 in the rack bar 42. Said rack bar has the teeth 46 arranged in the center of its lower edge cooperating with a gear 47, the pin 48 of which is journaled in the said base bar 38 and the lower part of said wall 35, and to the inner end 49 of said pin, projecting within the space in the vehicle, is secured a crank lever 50 for rocking the same.

The pins 40 will be operated by the rack 42 in a manner to be described presently and will secure or release the lower bar 11 of the frame 10. For the releasable securing of the sides or stiles of the frame 10 in the opening 22 of the vehicle wall, the left hand and right hand wedges 51 and 52 respectively, will be used.

The wedge 51 shows a vertical outer surface 53 and an inwardly and upwardly inclined inner surface 54 so that its upper end 55 will be considerably wider than its lower end 56, the width gradually increasing from the lower end to the upper end thereof and the wedge 51 being upwardly and downwardly slidable between the respective plates 28 and 29 and in a respective pocket 57 in the wall of the vehicle. A second left hand wedge piece 58 may also be used in our invention being of a reversed inclination and of a length substantially equal to the height of the frame 10 and being slidable in a vertical direction between the plates 28 and 29.

In a similar manner, right hand wedges 52 and 60 may be employed between the plates 31 and 32 and in the upper pocket 59 at right hand side of the window frame, their wedge action being opposed to the wedge action of the pieces 51 and 58 for the left side of the window. The lower end of the left hand wedge proper 51 carries an inwardly projecting pin and roller 61 operating in a slot 62 in the rack bar 42, and similarly a pin and roller 63 is provided at the lower end of the wedge 52 operating in a slot 64 in rack bar 42. Vertical slots 65 are provided in the inner side of the base bar 38 to provide for the upward and downward play of the respective pins and rollers 43, 61 and 63 and appropriate recesses 66 and 67 are also arranged at the ends of said base bar 38 for the lower ends 56 and 68 of the left hand and right hand wedges 51 and 52 (Figs. 1 and 10).

The use and operation of our device will be obvious from the drawings and the herein description. The window frame 10 with its sash 15 in a closed position will be placed into the opening 22, easily but still closely fitting thereinto, as indicated in Fig. 1; the rack bar 42 will then be moved in a right hand direction as indicated by the arrows 69 in Fig. 7, the slots 45 pressing the pins 40 upwardly into the openings or holes 41 in the bottom of the lower rail 11, thereby pressing the window frame against the upper edge of the opening 22 in the upper part of the vehicle wall and also securing said window frame against a lateral movement inwardly or outwardly, at the same time slots 62 and 64 pulling the side wedges 51 and 52 in a downward direction, indicated by the arrows 70 and 71, which causes the intermediate wedge pieces 58 and 60 to be strongly pressed against the two sides of the window frame thereby further sealing and securing the same. In such a position of the window frame, the sash 15 may be moved upwardly and opened to a desired degree, as shown in Fig. 2, and the window may have the role, utility, and appearance of any usual window in a vehicle. The right hand movement of the bar 42 will be executed by turning the crank lever 50 in a clock-wise direction as indicated in Fig. 8 by the arrow 72. In case of an emergency, to provide an instant exit through the respective window opening for the people within the vehicle, all that is needed is to move the bar 42 in a reverse direction as indicated by the arrow 74 in Fig. 7, and for which it is sufficient to turn the crank lever 50 in an anti-clockwise direction, whereupon the respective slots 45, 62 and 64 will cause the respective elements 40, 51 and 52 to execute reverse motions to those described hereinbefore thereby withdrawing said pins 40 from the bottom rail of the window and relieving the pressure of the intermediate wedge pieces 58 and 60 on the sides of the window frame. It will be obvious that in such a position, the window frame may be easily and quickly pushed inwardly or outwardly from the opening 22 in the wall of the vehicle by the slightest inward or downward pressure.

The operating lever 50 of our device may be sealed in an appropriate housing 73 secured adjacent to the window inside of the vehicle with a hammer or other means arranged in its vicinity, available to the public, and with the usual instructions to break the sealing box 73 and operate the lever in case of an emergency.

In Fig. 4, the sealing housing is shown as made of glass while in Fig. 3 it is indicated as made of some other easily breakable, and preferably transparent material, like cellophane. and it is understood that the detail construction and arrangement of this sealing box may greatly vary.

As best shown in Fig. 2, the sash 15 is of less height than the frame 10 and may be partially opened by sliding upwardly in slots 21. The upper part of the window may be closed by a so-called "transom" or glass pane 75 permanently secured into the frame 10, outside of the path of

the sash 15, and its lower end may be finished by a bar 76, as usual.

It is believed from the above description that those skilled in the art will have no difficulty in understanding the construction, the method of use and operation of the device herein disclosed. The invention is of simple and practical construction and is adapted to accomplish among others all of the objects and advantages herein set forth.

Without further analysis, the foregoing will so fully reveal the gist of this invention that others can by applying current knowledge readily adapt it for various applications without omitting certain features, that, from the standpoint of the prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention, and therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalency of the following claims.

What we claim as new, is:

1. In a window, having a frame carrying the window pane, said frame being set sealingly into an opening in a wall; mechanical means to secure and seal said frame in said opening, and a single element for actuating said means a single movement of said element being adapted to entirely release said frame, said frame being then free to be pushed out from said opening either inwardly or outwardly.

2. In a window, having a frame carrying the window pane, said frame being set sealingly into an opening in a wall; mechanical means to secure and seal said frame in said opening, and a single element for actuating said means, said frame being adapted to instantly be released by a single movement of said element, said frame being then free to be pushed out from said opening either inwardly or outwardly.

3. For a window for a moving vehicle, having a frame carrying a window pane, said frame being set sealingly into an opening in the wall of the vehicle; mechanical means to secure and seal the frame in said opening, and a single element for actuating said means, a single movement of said element being adapted to instantly release said frame, said frame being then free to be pushed out from said opening either inwardly or outwardly.

4. In a window for moving vehicles, having a frame carrying a window pane, said frame being set sealingly but easily removable in a lateral direction into an opening in the wall of the vehicle; a horizontal element underneath said frame slidable in a right hand or left hand direction; upwardly movable members operated by said slidable element and adapted to engage or disengage recesses in the frame upon the sliding of said element in one or in the other direction, and means to move said element, in either direction and thereby secure or release said frame through said members.

5. In a window for moving vehicles, having a frame carrying a window pane, said frame being set sealingly but easily movable in a lateral direction into an opening in the wall of the vehicle, a horizontal element underneath said frame slidable in a left hand or right hand direction; upwardly movable members operated by said slidable element and adapted to engage or disengage recesses in the frame upon the sliding of said element in one or in the other direction; means to move said element; and a second member adapted to engage or disengage the side of said frame, also operated by said sliding element, a movement of said element in either direction being adapted to respectively secure or release said frame through said upwardly movable members and to seal or release the sides of the same through said second member.

6. In a window for moving vehicles, having a frame carrying a window pane, said frame being set sealingly but easily removable in a lateral direction into an opening in the wall of the vehicle; a horizontal element underneath said frame slidable in a right hand or left hand direction; upwardly movable members operated by said slidable element and adapted to engage or disengage recesses in the frame upon the sliding of said element in one or in the other direction, and means to move said element, said means including a member projecting within the vehicle and a single movement of which will set said sliding element in operation and cause an instant securing or release of said frame, through said members.

7. In a window for moving vehicles having a frame carrying a window pane, said frame being set sealingly but easily removable in a lateral direction into an opening in the wall of the vehicle; a horizontal element underneath said frame slidable in a right hand or left hand direction; upwardly movable members operated by said slidable element and adapted to engage or disengage recesses in the frame upon the sliding of said element in one or in the other direction, and means to move said element, said means including a member projecting within the vehicle a single movement of which will set said sliding element in operation and cause an instant securing or release of said frame through said members; two wedge shaped elements on the two sides of said frame operated by said sliding element and adapted to seal the two sides of the window or to release the same upon the movement of said sliding element in one direction or the other.

8. In a window, having a frame carrying the window pane and being set into an opening in a wall, means to secure said frame in said opening, and a slidable element arranged on said wall adjacent to said frame, a single movement of said slidable element being adapted to instantly release said securing means, and permit said frame to be pushed out of said opening, either inwardly or outwardly.

9. In a window, having a frame carrying the window pane and being set into an opening in a wall, means to secure said frame in said opening, a pivoted lever arranged on said wall adjacent to said frame in operative connection with said means whereby a single rocking of said lever will be adapted to release said means and permit said frame to be pushed out of said opening, either inwardly or outwardly.

10. In a vehicle, having a window with a frame carrying the window pane and being set into an opening in the wall of the vehicle, means to secure said frame in said opening, and a mechanical element within the vehicle adjacent to said window, a single movement of said mechanical element being adapted to release said means and permit said frame to be pushed out of said opening, either inwardly or outwardly.

11. In a window having a frame carrying the window pane and being set into an opening in a wall, means to removably secure said frame in said opening, and means to entirely and instantly release said first mentioned means and permit

said frame to be pushed out of said opening either inwardly or outwardly, said releasing means being operated by a single movement of a single element.

12. In a window having a frame carrying a sash slidable therein, said frame being set sealingly but easily removable in a lateral direction into an opening in a wall; mechanical means to secure and seal said frame in said opening, and a single element for actuating said means, a single movement of said element being adapted to entirely release said frame, said frame being then free to be pushed out from said opening either inwardly or outwardly, in any position of said sash.

WILLIAM J. ZEEB.
JOHN T. DAMMES.
ALFRED C. MORRIS.