

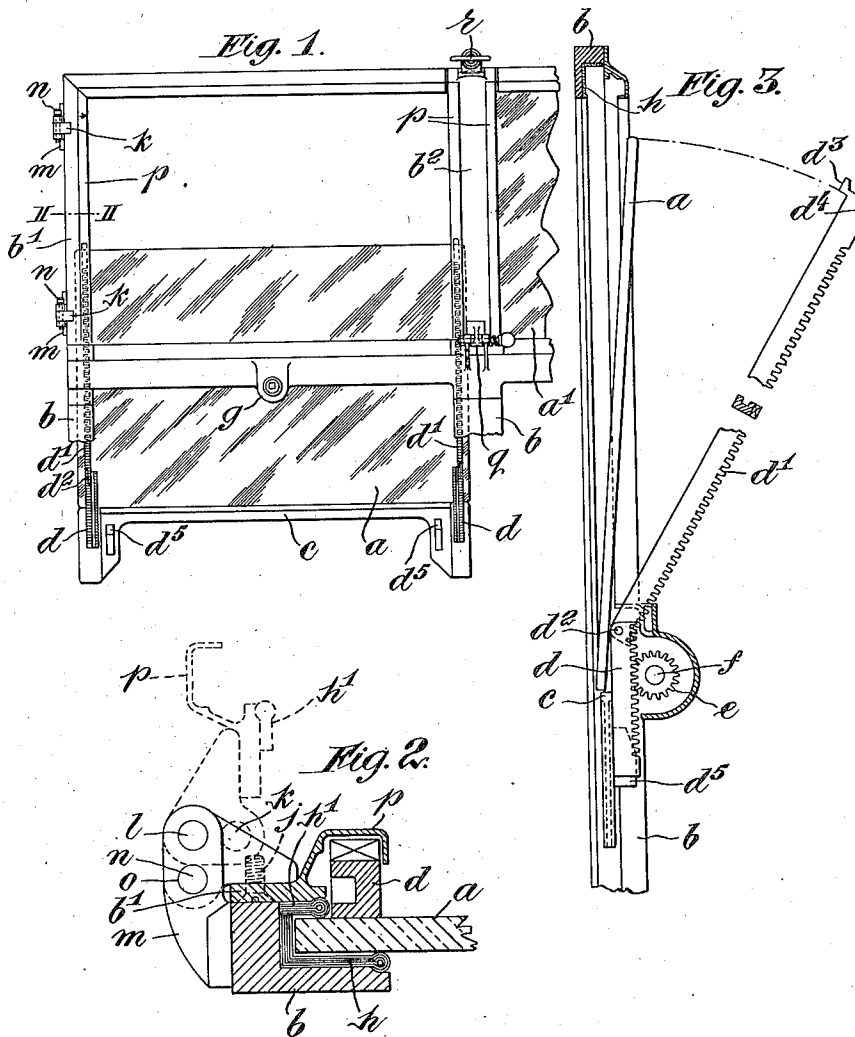
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SLIDING WINDOW

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SLIDING WINDOW

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1 Claim. (Cl. 20—52.2)

This invention comprises improvements relating to sliding windows, particularly for ships or vehicles, and is concerned with structures in which the sliding glass or glass holder and glass, hereinafter simply termed glass, is operated by rack and pinion gear comprising rack means spaced inwardly from the side edges of the glass so as to leave the side edge portions of the glass free for sliding in channel guides of the frame.

The channel guides are suitably lined with a flexible material such as felt, rubber or other non-concussive material to prevent rattle of the glass or fracture of the same when subjected to shock, and the construction is light and strong and of good appearance.

It is frequently desirable that the glass should be capable of being readily removed from the window frame, for example to facilitate maintenance of and attention to the window or the cleaning of the glass upon both sides. Also in the case of naval vessels, it is advantageous to be able readily to remove the glass during firing practice, for instance, and thus to avoid the risk of said glass being shattered by such firing.

However, easy removal of the glass has heretofore been prevented owing to the presence of the racks for it is a matter of inconvenience to have to remove the racks for mesh with the pinions whenever a glass is to be removed.

An important object of the present invention is to facilitate removal of the glass in these sliding windows.

A further object of the invention is to construct the racks of these sliding windows for adjustment to allow of removal of the glass without disturbing the mesh between the racks and their pinions.

With these and other objects in view the invention provides a sliding window having frame parts which are removable and a rack or racks which is or are made in two parts hingedly connected together, so that when the frame parts are removed, one rack part can be swung out or removed to facilitate withdrawal of the glass, whilst the other part remains in mesh with the pinion.

In order to enable the invention to be readily understood reference is directed to the accompanying drawing which illustrates by way of example one practical construction of sliding window in accordance with these improvements.

In this drawing:—

Figure 1 is an elevation, as seen from the inner side, of a double ship's window according to this invention.

Figure 2 is an inverted plan section on the line II—II of Figure 1, but to a larger scale, and

Figure 3 is a sectional side elevation of Figure 1 but to a larger scale and is intended to illustrate the operation of the racks when a glass is to be removed.

Referring to the drawing, the glass *a*, to be raised or lowered in the window frame *b*, rests upon a guided cross bar or carrier *c*. Side racks *dd*¹ having their lower ends connected with the carrier *c* at a short distance inwardly from the side edges of the glass, are in mesh with pinions *e* fixed to a cross shaft *f*. A crank handle may be inserted into the box *g*, Figure 1, for driving the shaft *f* in one direction or the other through the medium of worm or bevel gearing.

As will be seen clearly from Figure 2, the side edges of the glass *a* move in channel guides in the frame *b*, the walls of such guides being fitted with suitable weather-tight packings *hh*¹. In order to enable the glass to be readily removed, one side wall *b*¹ of the channel guide is made as a separate cover plate or strip. In the example shown in Figure 2 and at the left hand side of Figure 1, the cover strip *b*¹ is attached by screws *j* to angle arms *k* adapted for swinging about vertical pivots *l* in lugs *m* on the framing *b*. The packing strip *h*¹ is attached to the cover strip *b*¹, so that when the latter is swung out about the pivots *l* to the position shown in dotted lines in Figure 2, the packing strip *h*¹ also is carried outwardly so as to free the glass *a* for removal. The strips *b*¹*h*¹ are locked in the working position, shown in full lines in Figure 2, by means of locking pins *n*, Figure 1, which are dropped into registering holes *o*, Figure 2, in the angle arms *k* and lugs *m*.

The cover strip *b*¹ is on the inner side of the window so that it is swung into the cabin room or other enclosed space when the glass *a* is to be removed. In some windows, there may be a horizontally swingable cover strip *b*¹ at the right hand side, exactly the same as that shown on the left hand side of Figure 1. The racks *d* are also on the inner side and lie against the glass inwardly of the movable cover strips *b*¹, as shown. Also, the racks *d* are normally covered by shields *p* carried by the cover strips *b*¹. It will be seen, therefore, that when the cover strips *b*¹ have been swung to the dotted line position in Figure 2, the racks *d* must be removed from the glass *a* in order that the latter may be taken out.

As seen clearly from Figures 1 and 3, the racks *d* are made in two portions *dd*¹, hingedly con-

nected together at d^2 , the portion d^1 being of much greater length than the portion d . When a window is fitted with a horizontally swingable cover strip b^1 at each side and it is desired to remove the glass, the latter is lowered or raised to about the elevation indicated in Figure 3. In this elevation, the glass a is a little short of the closed position and the short portion d of each rack is in mesh with the appropriate pinion e . The cover strips b^1 are then unlocked by withdrawing the pins n from the holes o whereupon the cover strips b^1 are swung to the dotted line position in Figure 2. The long rack portions d^1 are then swung downwardly about their hinges d^2 to the dotted line position indicated in Figure 3, whereupon the glass a is free to be taken hold of and tilted out of the plane of its guides and inwardly of the cabin or enclosed space. Finally, the glass is lifted from its carrier c and into the cabin or enclosed space. It is thus a simple matter to remove a glass to avoid damage during gunfire or to permit of examination and this involves no disturbance of the meshed racks and pinions. The operation of reinserting a glass, or inserting a new glass in place of a damaged glass, will be apparent without further description. Stop means may be provided for limiting the angle through which the rack portions d^1 can be swung about the hinges d^2 . In the example illustrated in Figure 3, this angle is limited to about 40° . Such stop means may be provided in the construction of the hinge connections.

The window illustrated in Figure 1 is a double window, there being a second glass a^1 to the right which may be movable up and down in guides in exactly the same manner as the glass a . In this case, a cover plate or strip b^2 , wide enough for the two adjacent channel guides, is hingedly mounted on a horizontal pivot q at its lower end. The cover plate or strip b^2 is provided with two shield parts pp for covering the respective right-hand and left-hand racks of the glasses aa^1 . A

clip or fastening r at the upper end of the cover plate or strip b^2 secures the latter in its closed vertical position against the two glasses aa^1 . With this construction, the removal of a glass requires the clip r to be released and the cover plate or strip b^2 to be swung downwards about its pivot q . Also, the cover strip b^1 at the other side must be released and swung horizontally about its pivots l . The appropriate rack portions d^1 are then turned down about their hinge connections d^2 and the glass in question is thus made free for removal in the manner described.

As will be seen from Figure 3, the upper ends of the rack portions d^1 may be formed with projections d^3 . These engage the top edges of the glasses when the rack portions d^1 are turned into the vertical position. This ensures that the glasses must always descend with their carriers c and prevents any rising of a glass from its carrier. It will be seen further from Figure 3 that the upper ends of the racks may be formed with wedge surfaces d^4 and that the carriers c may be fitted with wedge devices d^5 , the latter being seen also in Figure 1. As a glass reaches the closed position, the wedges d^4d^5 engage suitable parts of the frame and cause the glass to be pressed against the packing h in known manner, so that a weather-tight closure is produced.

I claim:—

In a sliding window, and in combination, a frame comprising channel guides for a slidable glass said guides having removable side walls to facilitate removal of the glass, and rack-and-pinion mechanism operative for effecting sliding movements of said glass, said mechanism comprising a rack disposed inwardly of the removable walls of said guides and made in two parts hingedly connected together, whereby a rack part can be swung clear of the glass to permit it to be removed from the frame while the other rack part retains mesh with its pinion.

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