Aug. 3, 1943. F. J. WESTROPE 2,326,084

WINDOW LOCK

Filed Sept. 4, 1941

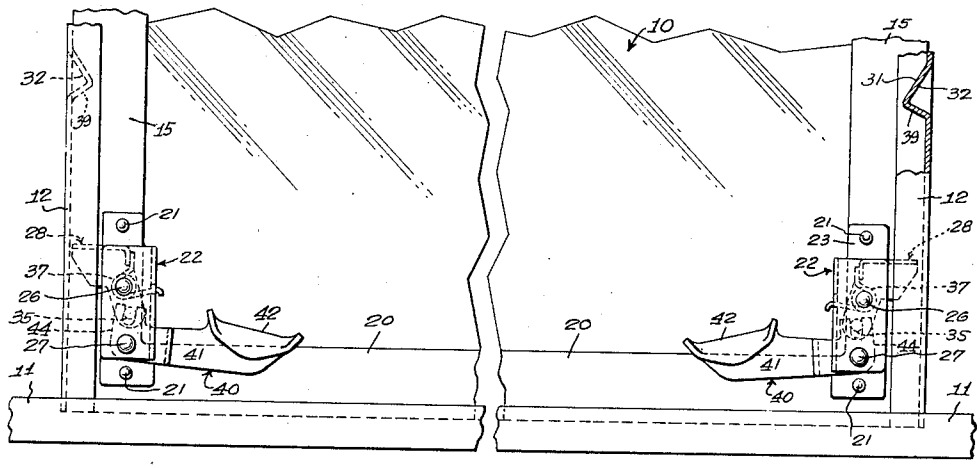


Fig. 1.

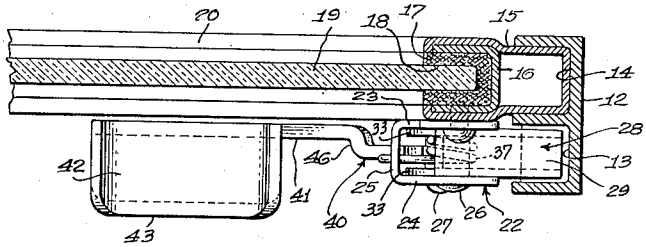


Fig. 4.

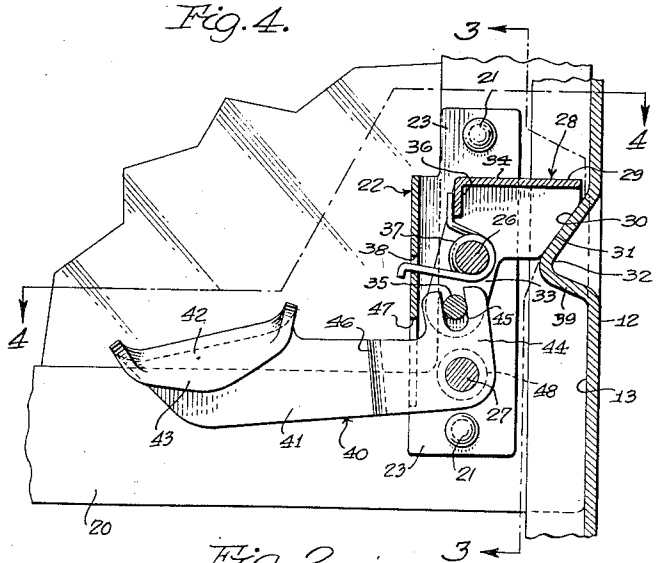


Fig. 2.

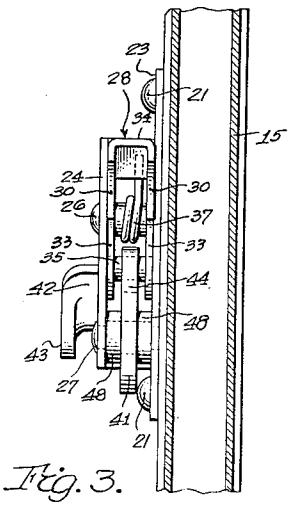


Fig. 3.

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WINDOW LOCK

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Application September 4, 1941, Serial No. 409,453

1 Claim. (Cl. 292—226)

This invention relates to locks or latches, and in particular to window locks for holding windows in partially or fully open positions, such as vehicle windows.

One object of this invention is to provide a window lock which may be unlatched by the natural motions of a person attempting to raise the window.

Another object is to provide a window lock having a bolt or latch which is released by the lifting of a handle which is grasped by the operator in lifting the window.

Another object is to provide a window lock wherein the bolt or latch member engages an inclined lug by which the window may be held in a partially or fully open position but past which the latch will move when the operator closes the window.

Another object is to provide a window lock or latch having a spring-urged bolt with an inclined surface cooperating with an inclined lug in such a manner that the spring yieldingly holds the bolt against the lug by a force which may be overcome by the operator in merely pulling down the window.

Another object is to provide a window latching or locking assembly consisting of two bolts or latches mounted at opposite edges of the window and engageable with lugs in the window slides, the bolts or latches being operatively connected to levers which, when grasped by the operator in the natural motion of lifting the window, also retract the bolts or latches to permit such lifting.

In the drawing:

Figure 1 is a front elevation, partly in section, of a window unit equipped with the window lock or latch of this invention.

Figure 2 is an enlarged vertical sectional view through the window lock;

Figure 3 is a vertical cross section through the same lock taken along the line 3—3 in Figure 2.

Figure 4 is a substantially horizontal section taken along the line 4—4 in Figure 2.

In general, the window lock of this invention consists of a retractible bolt or latch which is operatively connected to a handle in such a manner that when the handle is pulled upward by the natural motion of raising the window, the bolt or latch is retracted. The bolt or latch normally engages lugs or recesses mounted in the window frame or slide and these are preferably equipped with inclined contacting surfaces such that they will click past one another when the top of the window is pulled downward by the operator in the natural motion of closing the window. The latch or bolt is yieldingly urged, as by a spring, into engagement with the lugs or recesses in the window frame or slide.

Referring to the drawing in detail, Figure 1 shows a window, generally designated 10, such as for a vehicle, equipped with a sill 11 from which rise the frame side members 12 having inner and outer channels or grooves 13 and 14 respectively (Figure 4). Slidably mounted in the channel 14 is a sash frame 15 containing a window pane holder 16 of channel cross section. The latter in turn receives a liner 17 of resilient material, such as rubber, having a groove 18 therein for receiving the edge of the glass pane 19. The vertical sash frame members 15 are interconnected by the horizontal sash frame members 20 (Figure 1), only one of these being shown.

Secured as at 21 to each vertical sash frame member 15 is a lock casing 22 having outer and inner portions 23 and 24 interconnected by a side portion 25. The side opposite the portion 25 is open, so that the portions 23, 24 and 25 form a channel member through which pass upper and lower pivot pins 26 and 27 respectively. These pivot pins may be in the form of rivets, as shown, or any other suitable form such as screws. Pivotally mounted on the upper pivot pin 26 is a latch or bolt 28 in the form of a bell crank having a nose portion 29 entering the channel 13. The nose portion 29 has an inclined edge 30 engageable with the correspondingly inclined edge 31 of a lug 32 projecting inwardly into the channel 13 from the window frame side members 12. The bolt or latch 28 is of channel cross section (Figure 3) with side wings 33 interconnected by a top web 34. The side wings 33 extend downwardly to form the operating arms of the bell crank and are interconnected by a pin 35 near their lower ends. The top web 34 is bent downwardly as at 36 to form an abutment for one end of a coil spring 37 which encircles the upper pivot pin 26 and which has its opposite end anchored in the aperture 38 in the rear wall 25 of the casing 22. Thus the bolt or latch 28 is yieldingly urged into latching engagement with the lug 32, the latter having a lower edge 39 which is more steeply inclined to the vertical than the upper edge 30. Each of the channels 13 is provided with a plurality of the lugs 32 spaced at intervals in such a manner that the window may be held either partially or fully open in a number of positions.

Mounted on the lower pivot pin 27 is an operating lever 40 likewise in the form of a bell crank having the outer arm 41 equipped with an outwardly bent handle or grip 42 projecting sub-

stantially perpendicularly to the arm 41 and bent over at its outer edge 43 to provide a recess beneath the handle 42 for the finger tips of the operator. The inner arm 44 of the operating lever 40 is provided with a U-shaped slot 45 engaging the opposite sides of the pin 35 to provide a pin and slot connection. The outer arm 41 is bent as at 46 prior to its entry through the slot 47 into the interior of the casing 22. In order to properly space the operating lever 40 within the casing 22, spacing washers 48 are provided on the lower pivot pin 27 on opposite sides of the operating lever 40.

While the construction of a single lock has been described, it will be understood that preferably a pair of such locks are provided at opposite vertical edges of the window, as shown in Figure 1. By this means, the operator is provided with a handle 42 for each hand.

In the operation of the window lock or latch of this invention, the window 10 may be assumed to be in its closed position, as shown in Figure 1. To raise the window, the operator inserts his finger tips beneath the handles 42 of the operating levers 40 and pulls upward with the natural motion of opening the window. The vertical pull upon the handles 42 swings the operating lever 40 around the pivot pin 27, thereby swinging the inner arm 44 and wings 33 to the right (Figure 2) by means of the pin and slot connection 35, 45. This action overcomes the urge of the coil spring 37 and causes the nose portion 29 of the latch or bolt 28 to swing upwardly and to the left around its pivot 26 away from the lug 32 with which it is engaged. This action swings the nose portion 29 out of the path of engagement with the subsequent lugs 32 so that the window may be raised to any desired height without bringing the latch or bolt 28 into contact with the lugs 32.

When the operator has raised the window to the desired height, he releases the handles 42, whereupon the window starts dropping under its own weight. Meanwhile, however, the coil springs 37 have urged the latches or bolts 28 into the channels 13 so that the window drops only a slight distance before the bolts 28 engage a pair of lugs 32 and halt the downward travel of the window. The window is thus held in its fully or partially opened position by the engagement of the inclined surfaces 30 and 31 of the latch 28 and lug 32 respectively.

To close the window, the operator can merely grasp the upper horizontal frame member 20 (not shown) and merely pull downward upon the window in the natural motion of closing an ordinary sliding sash. The force thus exerted causes the bolts or latches 28 to swing inward and click past the lugs 32 as the window moves downward, overcoming the force of the spiral springs 37. The inclined arrangement of the edges 30 and 31 of the bolts 28 and lugs 32 serve to facilitate this ratchet-like action.

In this manner the window of the vehicle or other structure may be raised and lowered with the natural motion which a person would ordinarily use in raising and lowering a window not equipped with latches. Furthermore, the handles 42 are of sufficient size and the operating levers 40 sufficiently long to permit the exertion of a powerful force. This is in contrast to the weak and often inadequate force capable of being exerted by the unaided fingers in devices which require members to be shifted by the force exerted by the fingers alone. The unlatching direction of the operating levers 40, furthermore, is in the same direction as the direction in which the window must be moved to open it. Certain prior art devices, however, required the pressing down of a lever to open the window and at the same time the lifting of the window, these mutually contradictory motions interfering with the ease of opening the window.

It will be evident that the window latch or lock of this invention may be used in vehicles of all types, as well as in stationary structures.

It will be further evident from Figure 1 that to close the window where the top cross member of the window is not accessible, the operator can pull downward on the bottom cross member 20. Optionally, the operator can push downward upon the casings 22. In either case the inclined latches 28 yield and click past the inclined lugs 32 as the window moves downward.

While a specific embodiment of the invention has been described and illustrated, it will be understood that various modifications may be made within the scope of the appended claim without departing from the spirit of the invention.

What I claim is:

A window lock comprising a lock support, a bell crank bolt lever pivotally mounted thereon, said bell crank lever comprising spaced plate-like members connected by a pin at one end and by a connecting web at the opposite end, an operating lever having a bifurcated end engaging between said plate-like members operatively connected to said pin and operable to retract said bolt lever in response to the moving of said operating lever in the direction of opening the window, said bolt being positioned to swing upwardly and into said lock support, and a spring engaging said lock support and encircling the pivot of the bolt lever with its free end engaging said connecting web to normally urge said bolt outwardly and downwardly to a locking position.

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