Jan. 12, 1932. L. C. HINDERER ET AL 1,840,508

AUTOMATIC WINDOW LOCK

Filed Feb. 11, 1931

Fig. 1.

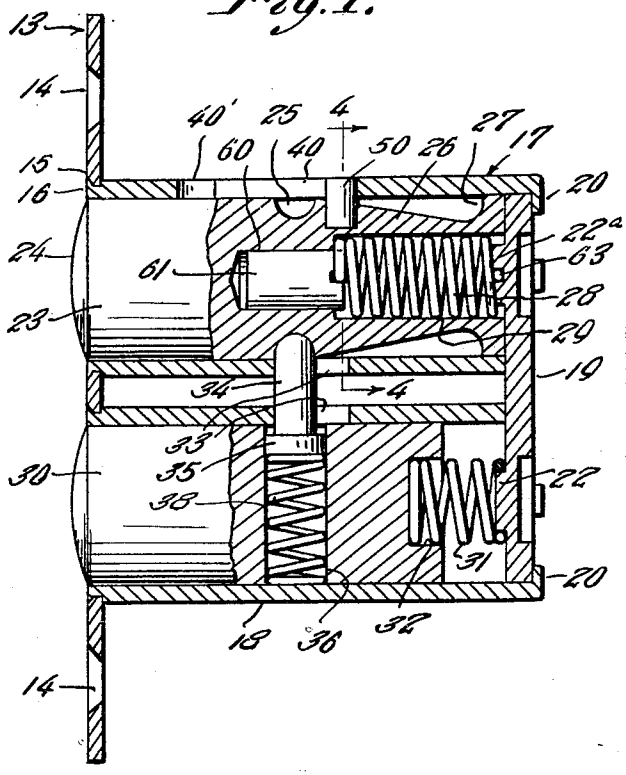


Fig. 2.

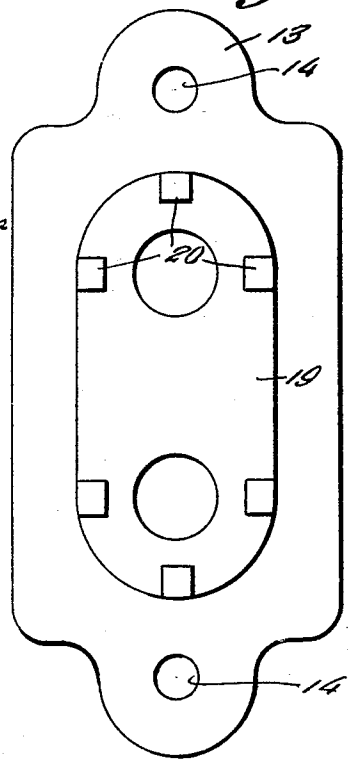


Fig. 3.

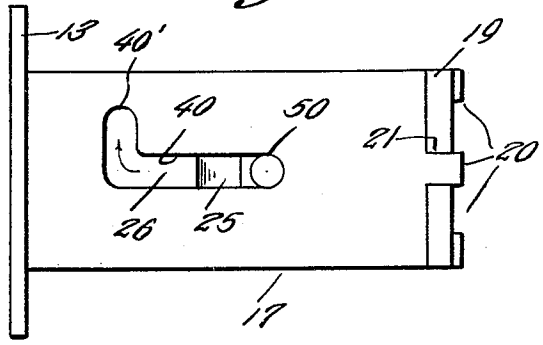
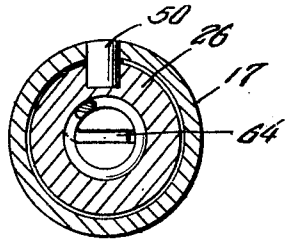


Fig. 4.



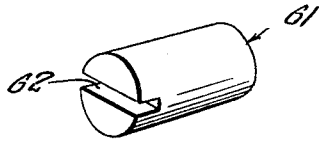


Fig. 5.

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Patented Jan. 12, 1932

1,840,508

UNITED STATES PATENT OFFICE

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AUTOMATIC WINDOW LOCK

Application filed February 11, 1931. Serial No. 515,101.

This invention relates generally to window locks, and particularly to an improvement of the window lock made subject of patent application Serial No. 480,998, filed Sept. 10, 1930, pending at this time, whereby the action of the window lock of said application is rendered automatic in the particulars which will be better understood as the following description is read in conjunction with the drawings.

It is the object of this invention to adapt to the structure set out in the above mentioned application, means whereby the plunger or plungers are automatically urged outwardly and are also automatically urged to rotate in a predetermined direction for further urging the bolts or plunger into locking position, releasable by a reverse manual turning of the bolts.

These and other objects of the invention, its nature and its composition and arrangement and combination of parts will be readily understood by anyone acquainted with the art to which this invention relates by consulting the following description of the drawings, in which:—

Figure 1 is a longitudinal vertical sectional view through the lock.

Fig. 2 is an end view thereof, taken from the right of Fig. 1, and

Fig. 3 is a top plan view of Fig. 1, and

Fig. 4 is a transverse vertical cross sectional view approximately on the line 4—4 of Fig. 1, looking toward the right thereof,

Fig. 5 is a detail perspective of one of the parts disclosed in Fig. 1.

Referring in detail to the drawings, it will be observed, that the general structure of the improved form set out herein is very similar to that disclosed in patent application referred to above, the numeral 13 designating the front or attaching plate of the lock structure, of any desired formation, preferably oval or rectangular, and provided with upper and lower extensions, beyond the body of the lock and having counter-sunk screw holes 14, adapted to cooperate with screws or the like for positioning the plate on its support on the window sash or the like.

A pair of apertures 15 are formed side by side longitudinally of the central portion of the plate, to receive the forward end of a shoulder 16, on each forward end of a pair of cylindrical casings 17 and 18. The holes or apertures 15 are provided with a beveled edge so that the ends of the casings 17 and 18 therein may be swedged over as shown.

It is to be understood, of course, that the casings 17 and 18 may be of any desired transverse section such as square, hexagonal, or any other desired shape.

In the embodiment illustrated herein, the rear ends of the cylindrical casings 17 and 18 are closed by an oval plate 19 and secured against the rear ends thereof by means of prongs 20 situated as illustrated in the drawings, the prongs engaging notches 21 at the outer edge of the plate 19.

Snugly slidable in the upper casing 17 is a bolt or plunger 23 adapted to have its outward end 24 flush with the face of the plate 13, when in retracted position in the casing 17. An intermediate portion of the bolt or plunger 23 is provided with a round groove 25, from the rear edge of which the bolt tapers gradually to achieve the formation illustrated at 26, to a point near the rear end of the bolt, where the flange 27 comes into being and takes the same peripheral proportion as the main portion of the bolt 23.

A pin 50 is fixed just to the rear of the groove 25, to extend upwardly from the bolt, and to have a sphere of action limited by an L-shaped slot 40, having the right angular portion 40′. It is believed obvious that when the bolt 23 is in outward extended position, that the pin 50 has moved forwardly in the slot 40, and in this forward position, the pin 50 is adapted to take a right angular course due to movement of the bolt, thus becoming positioned in the right angular slot 40′ and retaining the bolt against inward movement unless retracted from the portion 40′ of the slot 40.

Slidably and snugly fitted in the lower casing 18 is a bolt or plunger 30 whose forward end is similarly formed and adapted to be positioned in retracted position similarly to the bolt 23.

A coiled spring 31 has its rear end positioned on a boss 22 on the forward face of the rear plate 19, and the forward end of this spring is positioned in a cavity 32 in the rear end of the bolt 30, for maintaining the bolt 30 in a normally forward position.

It will be observed that the bolt 30 is considerably shorter than the bolt 23. Positioned at an intermediate part of opposing surfaces of the walls of the casings 17 and 18, or in other words, in the lower wall of the casing 17 and in the upper wall of the casing 18 are a pair of elongated openings 33 which permit a pin 34 to be projected from the casing 18 and through the casing 17 to achieve registry with the round groove 25, or the tapered portion 25 of the bolt 23, according to the present position of the bolt 23.

The pin 34 has an enlarged base portion 35 which is slidably mounted in a vertically disposed well 36. The base portion 35 rides upon a vertically disposed coil spring 38, which normally projects the pin 34 and maintains it upwardly positioned. The spring 38 has its lower end positioned against the wall of the casing 18.

In the invention disclosed in the application Serial No. 480,998, to which reference has been made herein, no means have been provided whereby upon the outward movement of the bolt 23 it would be maintained in locked position, and the arrangement was such as to make it possible for vibration to disclocate the plunger from its retaining means, and cause the inadvertent releasing of the plunger with consequent retraction thereof, and a failure to maintain the locked position of the elements upon which it was mounted for that purpose.

However, in the present invention the features of improvement constitute a means whereby upon the manual manipulation of the plungers, the locking plunger will be automatically urged into locking position, and so maintained for manually moving it out of this locking position, and the means by which this is achieved are set out herein below, designated for convenience of reference to the above application by numerals 60 and above.

In the cylindrical horizontal bore 29 there is at the forward end thereof, a reduced cylindrical recess 60 in which is plug fitted a plug 61 which has its rearward end somewhat over the opening of the said recess 60 to the chamber 29, and this projecting end is formed with a slot 62 to receive the forward diametrically bent end 64 of a coiled spring 28, of otherwise exact likeness to the spring 28 of the invention in the above-mentioned application.

A boss 22*a* similar in all respects to the boss 22, except that it is outwardly extended to a somewhat greater degree, has a slot therein designated 63 for receiving a diametrically bent end portion 64 of the spring 28 whereby to yieldingly limit rotation of the bolt 23 in its longitudinal axis, and at the same time exert the longitudinal pressure so as to normally extend the bolt 23 outwardly.

Before the pin 50 is positioned in the bolt 23, the bolt 23 is twisted or turned to either the left or the right according to the placement of the portion 40′ of the slot 40, whereby to deform the spring 28 in an opposite direction. Upon achieving the proper amount of twist in the spring 28, the pin 50 is placed so as to normally hold the bolt 23 against rotation.

It is believed obvious that once the bolt 23 is extended outwardly sufficiently to permit the pin 50 to come into the laterally formed portion 40′ of the slot 40, that the stored tension in the spring 28 will untwist the spring 28 and rotate the bolt 23 with the consequent positioning of the pin 50 in the said laterally formed portion 40′ of the slot 40.

It is believed obvious that it will be necessary in order to place the bolt 23 in retracted position, to manually turn the bolt 23 until the pin 50 moves into the slot 40 from the laterally formed portion 40′. This condition protects the window lock against unauthorized interference in locked position with the bolt 23 extended since it will be practically impossible to turn the bolt 23 so as to achieve its retraction because it is necessary not only to turn the said bolt, but also to move it rearwardly and this cannot be successfully performed by the use of pliers or a knife, or the like, such as are frequently employed by unauthorized persons to force locks.

Fig. 1 illustrates the neutral position of the lock, said neutral position being maintained by the projection of the pin 34 into the groove 25. A movement from this neutral position is achieved by inward pressure upon the plunger 30 to displace or disengage the pin 34 from the groove 25. The displacement of the pin 34 from the groove 25 permits the spring 28 to project the bolt 23 into extended position. Because of the rotary tension in the spring 28, the bolt 23 upon reaching its extended position will be automatically rotated to bring the pin 50 thereof into the laterally formed portion 40′ of the slot 40 whereby an automatic locking of the plunger 23 in its extended position is brought about.

It is obvious, of course, that upon pressure upon the outer end of the bolt 23, and turning the same in a direction opposite to the extension of the laterally formed portion 40′ of the slot 40, that the bolt may then be pushed into retracted position to re-engage the pin 34, in the groove 25 for once more retaining the bolt mechanism in the neutral position.

It will be noted that what has been set out herein is an improvement upon the window lock of the mentioned pending application, whereby to automatically operate the plunger locking means thereof, and it is believed that the features of distinction between said application and the present application have been clearly set out and constitute a novel and substantial contribution to the art.

It is to be understood that we do not desire to limit the application of this invention to the particular modification set out herein, to illustrate the principles thereof, and any change or changes may be made in material, arrangement or combination of parts, consistent with the spirit and scope of the invention.

Having thus described our invention, what we claim as new is:—

1. A window lock of the type described comprising a plate for mounting on a window structure, a pair of tubular casings secured at their front ends in apertures in said plate, and a back plate for closing the rearward ends of said casings and supporting them in relation to each other; and a plunger closely slidable in one of said casings and adapted to position its outward end flush with the plate, said plunger being formed centrally with a peripheral groove from which extends rearwardly a tapered portion, and a flange on the rearward end of the plunger; and a bolt closely slidable in the other of said tubular casings having a central vertical well, a pin, and a spring for projecting the pin from said well, said pin adapted to be projected through registering apertures in said casing to seat frictionally in the said groove in said plunger; and a pair of bosses formed on the inner facing of said back plate, a coiled spring on each of said bosses and extending forwardly into recesses in the rearward ends of said plunger and said other bolt for maintaining said plunger and bolt in operative position in the casings and projecting plunger to a position extended from its casing, and automatic means for locking said plunger in extended position comprising a coiled extension spring under rotary tension having one end anchored against rotation in a slot in the boss of the back plate, and the other end thereof similarly anchored to a plug in the said recess of the plunger, said spring adapted to normally urge said plunger outwardly to carry a pin thereon forwardly through a longitudinal slot in its casing and rotate it so as to bring it and its pin into a right angular extension of said slot.

2. A window lock of the type described comprising in combination, a window frame, window sashes slidably mounted in the frame, means for limiting the relative movement of said sashes in said frame comprising a plate for mounting on a window structure, a pair of tubular casings secured at their front ends in apertures in said plate, and a back plate closing the rearward ends of said casings and supporting them in relation to each other; and a plunger closely slidable in the upper of said casings and adapted to position its forward end flush with the plate, said plunger being formed centrally with a peripheral groove from which extends rearwardly a tapered portion, and a flange on the rearward end of the plunger; and a bolt closely slidable in the other of said tubular casings having a central vertical well, a pin and a spring in the well, said spring adapted to project the pin from the well through registering apertures in said casings, to seat it frictionally in the said groove in said plunger; and a boss on the lower inner face of the back plate, a coiled spring seated on the boss and in a recess in the rear end of the lower bolt for normally urging the bolt outwardly of its casing; and another boss on the upper inner face of the rear plate having a slot therein for receiving a transversely bent end of a coiled spring having its other end transversely bent and received in another slot in the end of a plug tightly fitting in a recess in the plunger, said coiled spring being installed in said position under rotary tension and so as to normally urge said plunger to automatically carry a pin thereon forwardly through a longitudinally formed slot in its casing, and rotate it so as to bring said pin into a right angular extension of the slot, so as to lock the said plunger against inward movement.

In testimony whereof we affix our signatures.

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