July 8, 1924. 1,500,540

J. G. BERANGER

WINDOW LOCK

Filed Nov. 29, 1922 2 Sheets-Sheet 1

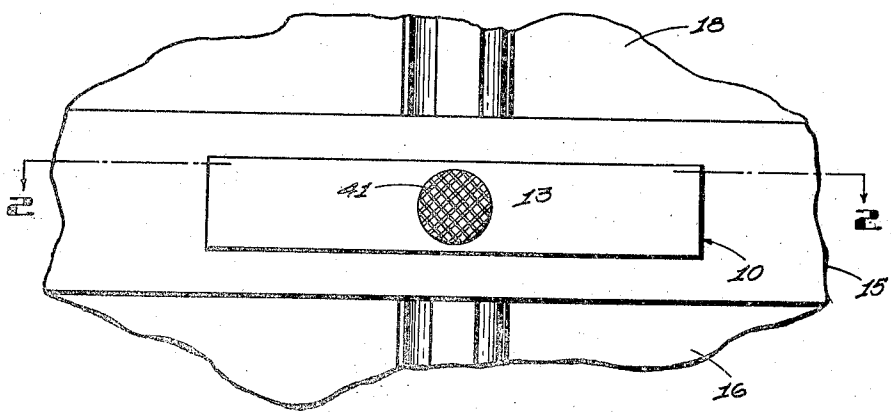


Fig. 1.

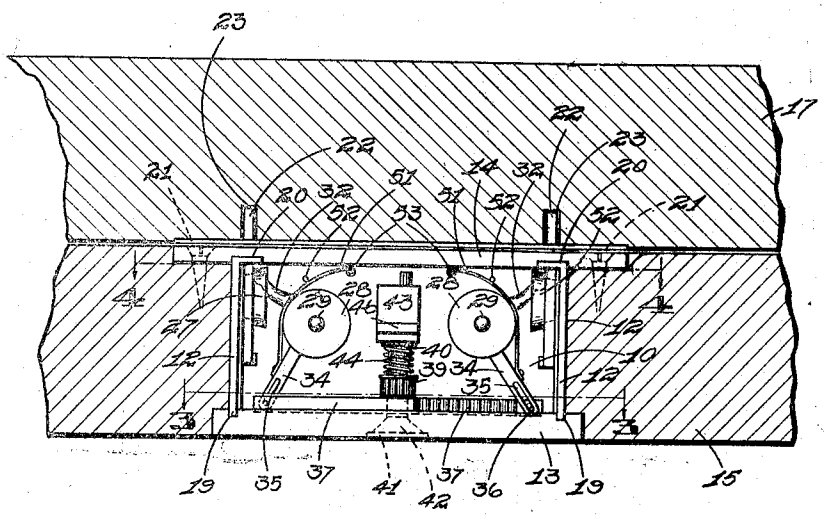


Fig. 2.

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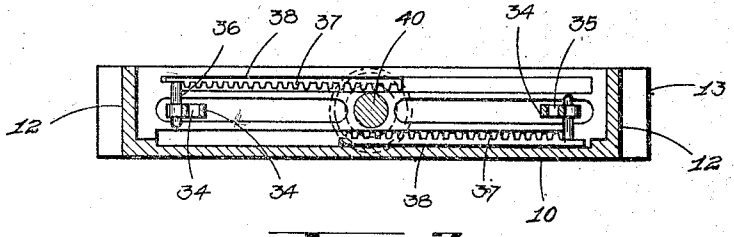


Fig. 3.

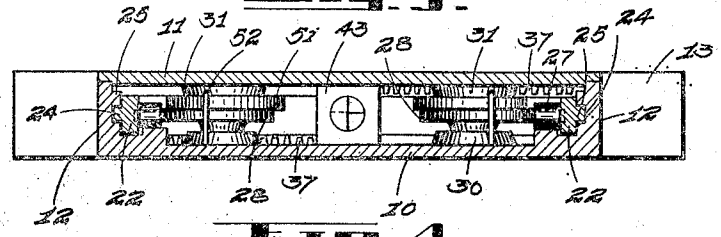


Fig. 4.

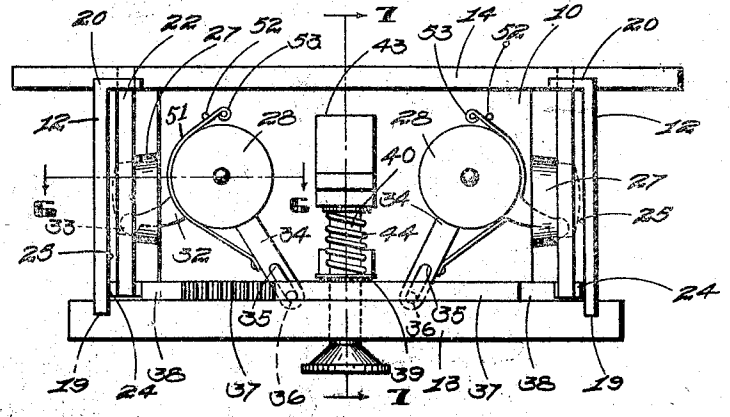


Fig. 5.

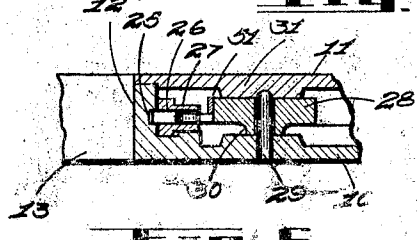


Fig. 6.

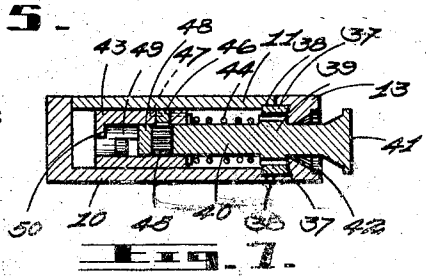


Fig. 7.

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UNITED STATES PATENT OFFICE.

JOHN G. BERANGER, OF CAMBRIDGE, MASSACHUSETTS.

WINDOW LOCK.

Application filed November 29, 1922. Serial No. 603,953.

To all whom it may concern:

Be it known that I, JOHN G. BERANGER, a citizen of the United States of America, and resident of Cambridge, in the county of Middlesex and State of Massachusetts, United States of America, have invented certain new and useful Improvements in Window Locks, of which the following is a specification.

This invention has relation to certain new and useful improvements in a window lock and has for its primary object the provision of a lock of simple construction and operation and compact form and which will serve to securely lock together the window sashes at the overlapping rails by means of parallel sliding bolts.

Another object of the invention resides in the provision of a lock of the character stated, which is especially designed for locking together the meeting rails of the window sashes in such a manner as to make it practically impossible for the window to be opened from the exterior.

A further object of the invention resides in the provision of a lock of the character stated, in which the sliding bolts will be operatively connected so as to work together in opposite sides of the lock casing.

The invention has for a still further object the provision of a lock of the character stated, in which the sliding bolts may be securely held either in their extended or withdrawn positions, as desired.

A still further object resides in the provision of a lock of the character set forth, in which the single operating member will be securely held in any of its various positions to prevent operation of the sliding bolts except by means of the single operating member.

Still another object of the invention resides in the provision of a lock of the character set forth, in which a rack and pinion mechanism will be employed for rotating the bolt actuating members and withdrawing the sliding bolts from their extended or operative positions when the single operating member is in its operative position.

With the foregoing and other objects in view, as will appear as the description proceeds the invention consists in the novel construction, combination and arrangement of co-operating elements as hereinafter more specifically set forth, claimed and shown in the accompanying drawings forming a part of the present application, in which:

Fig. 1 is an elevation of a portion of a window showing the lock mounted in the rail of the inner sash.

Fig. 2 is a horizontal section substantially on the plane of line 2—2 of Fig. 1, looking in the direction indicated by the arrows.

Fig. 3 is a vertical longitudinal section substantially on the plane of line 3—3 of Fig. 2, looking in the direction indicated by the arrows.

Fig. 4 is a vertical longitudinal section substantially on the plane of line 4—4 of Fig. 2, looking in the direction indicated by the arrows.

Fig. 5 is an enlarged plan of the lock with the casing cover removed and the sliding bolts in their inoperative or withdrawn positions.

Fig. 6 is a detail vertical longitudinal section substantially on the plane of line 6—6 of Fig. 5, looking in the direction indicated by the arrows.

Fig. 7 is a vertical transverse section substantially on the plane of line 7—7 of Fig. 5, looking in the direction indicated by the arrows.

Referring more in detail to the drawings, in which similar reference characters designate corresponding parts throughout the several views, 10 indicates in general the casing which has its upper side closed by the removable cover 11. The casing 10 is of substantially rectangular form and includes end members 12 and side plates 13 and 14. The casing 10 is adapted to be mortised in the rail 15 of the window sash 16, as shown in Figs. 1 and 2, in order that the lock may be employed for locking this rail 15 with the opposite rail 17 of the other window sash 18. This may be clearly understood by referring to Fig. 2.

When the casing 10 is properly mounted, the outer face of the side plate 13 will be flush with the corresponding face of the rail 15, while the outer face of the side plate 14 is flush with the corresponding opposite face of the rail 15. This is clearly shown in Fig. 2. It will also be seen by this view that the ends of the casing end members 12 rest in recesses 19 and 20 provided therefor in the casing side plates 13 and 14, respectively. To securely retain the casing 10 in proper position, securing members 21 are extended through the projecting end portions

of the side plate 14 and into the rail 15, the heads of the securing members 21 countersunk in the side plate 14.

Reciprocally mounted in the opposite end portions of the casing 10 are the parallel sliding bolts 22. These parallel sliding bolts 22 project through the side plate 14 and when in their extended or operative position, engage in the pockets 23 provided for this purpose in the rail 17 of the opposite window sash 18, thereby securely locking together the window sashes 16 and 18. Each of the parallel sliding bolts 22 has sliding engagement with the inner face of the adjacent end member 12 and a lug 24 on one side of the sliding bolt 22 rides in a longitudinal groove 25 in said end member 12, as shown in Fig. 5, as well as Fig. 4. Each sliding bolt 22 also has a transverse elongated slot 26 and flanges 27 projecting from around the edges thereof on the side of the sliding bolt 22 opposite the side facing the end member 12. The purpose of the transverse elongated slots 26 and flanges 27 will presently appear.

For controlling the parallel sliding bolts 22, the bolt actuating members 28 are pivotally mounted in opposite side portions or end portions of the casing 10. These bolt actuating members 28 are shown as being in the form of disks pivotally mounted concentrically on the post 29 carried in the bottom of the casing 10 and projecting upwardly through the bearings 30 carried on the bottom of said casing 10 and through the bolt actuating members 28, the upper ends of the posts 29 being adapted to be received in the bearings 31 provided for this purpose on the under face of the removable cover 11, when the latter is secured upon the casing 10.

The bolt actuating members 28 have arms 32 extended radially therefrom and slightly curved, said arms 32 having their outer free ends 33 rounded, as shown in the drawings. The arms 32 extend between the flanges 27 and into the transverse elongated slots 26 so as to actuate the parallel sliding bolts 22 when the bolt actuating members 28 are rotated on the posts 29, thereby forcing the parallel sliding bolts 22 outwardly to their extended or operative positions or drawing the parallel sliding bolts inwardly to their withdrawn or inoperative positions, these two extreme positions of the parallel sliding bolts 22 being shown in Figs. 2 and 5.

A lever 34 is extended radially from each bolt actuating member 28 and at an angle to the arm 32 carried thereby. Each lever 34 has an elongated longitudinal slot 35 provided in its free end portion, as shown clearly in Figs. 2 and 5. The pins 36 operate in the elongated longitudinal slots 35 to swing the levers 34 and thereby rotate the bolt actuating members on the posts 29. The pins 36 project laterally from outer end portions of the sliding racks 37. These sliding racks 37 work in grooves or channels 38 provided therefor in the casing 10 and the removable cover 11. The sliding racks 37 are opposed to one another and positioned in spaced relation with the slotted free ends of the levers 34 working between the sliding racks 37. It is, therefore, evident that the transverse teeth of one sliding rack 37 are provided on the upper face thereof, while the teeth of the other sliding rack 37 are located on the lower face thereof. This may be clearly understood by referring to Figs. 2 to 5 inclusive and Fig. 7.

The sliding racks 37 are adapted to be engaged and operated at times by the pinion 39 carried on the single operating bolt 40 which is rotatably and slidably mounted in the side plate 13 and provided with a head 41 on its projecting end. This head 41 is roughened on its outer face, as shown in Fig. 1 and is adapted to rest in the pocket 42 provided therefor in the side plate 13 when the single operating bolt 40 is forced inwardly, thereby disengaging the pinion 39 from the sliding racks 37.

Within the casing 10 is provided the bearing member 43, within which the inner end of the single operating bolt 40 is engaged. An expansion spring 44 is engaged around the single operating bolt 40, with one end bearing against the pinion 39, while the opposite end of the expansion spring 44 presses against the bearing member 43, thereby causing the single operating bolt 40 to be resiliently retained in its outermost or extended position. Ratchet teeth 45 are provided around the single operating bolt 40 within the bearing member 43 and a pawl 46 is mounted on the pivot pin 47 carried in the bearing member 43.

When the single operating bolt 40 is in its outermost or extended position with the pinion 39 engaging the sliding racks 37, the ratchet teeth 45 are opposite the pawl 46 and the latter operates to prevent rotation of the single operating bolt 40 in one direction. The single operating bolt 40 is therefore permitted, when in its outermost position, to rotate only in the direction which will draw the sliding racks 37 over one another toward the centre of the casing 10 and operate the bolt actuating members 28 to draw the parallel sliding bolts 22 into their inoperative or withdrawn positions, as shown in Fig. 5. The purpose of preventing rotation of the single operating bolt 40 in the reverse direction when in its extended or outermost position will presently appear.

A lateral or radial projection 48 is provided on the inner extremity of the single operating bolt 40 which prevents the single operating bolt 40 from being forced inwardly except when rotated sufficiently to

bring the lateral or radial projection 48 opposite the slot 49 in the bearing member 43, as shown in Fig. 7.

When the single operating bolt 40 is forced inwardly against the action of the expansion spring 44 and the lateral or radial projection 48 passed through the slot 49, the single operating bolt 40 may then be turned a sufficient distance, in one direction, to cause the lateral or radial projection 48 to catch in the transverse slot 50 at the end of the slot 49 and thereby retain the single operating bolt 40 in its innermost or inoperative position until the single operating bolt 40 is rotated in the reverse direction to again bring the lateral or radial projection 48 into registration with the slot 49, when the expansion spring 44 will operate to automatically force the single operating bolt 40 outwardly to its operative or extended position.

It is evident that as soon as the single operating bolt 40 is forced inwardly to disengage the pinion 39 from the sliding racks 37, the latter are free to return to their outermost positions. This returning of the sliding racks 37 to their outermost positions is accomplished by means of the arcuate leaf springs 51 extended partially around the bolt actuating members 28, one end of each arcuate leaf spring 51 being secured to the lever 34 of the bolt actuating member 28, for which the arcuate leaf spring 51 is provided. The free end of the arcuate leaf spring 51 is then extended between the bolt actuating member 28 and the upstanding pin 52 in the casing 10 near the edge of the bolt actuating member 28. The free extremity 53 of each arcuate leaf spring 51 is rolled back upon itself so that it may have sliding engagement with the inner face of the casing side plate 14, as shown in Fig. 2. The purpose of the arcuate leaf springs 51 is to automatically return the parallel sliding bolts 22 to their extended or operative positions and at the same time return the sliding racks 37 to their outermost or normal position as soon as the latter are released from the pinion 39.

It is believed the complete construction and operation of the lock may now be readily understood from the foregoing paragraphs taken in connection with the accompanying drawings without further detailed description. It may be briefly stated, however, that the parallel sliding bolts 22 are normally held in their withdrawn or inoperative positions, as shown in Fig. 5, so as to permit raising and lowering of the window sashes without interference of the lock.

When it is desired to secure the window sashes in closed position, it is simply necessary to bring the window sashes to closed position and then press the head 41 to force inwardly the single operating bolt 40. This will release the sliding racks 37 from the pinion 39 and permit the arcuate leaf springs 51 to act as previously described and force outwardly the parallel sliding bolts 22 and the sliding racks 37, the parallel sliding bolts 22 entering the pockets 23 of the opposite rail 17 and securely locking together the window sashes in closed position. When the head 41 is released, the expansion spring 44 will return the single operating bolt 40 to its extended or operative position with the pinion 39 engaged with the sliding racks 37.

The single operating bolt controls both sliding racks 37, and, when properly operated, will simultaneously withdraw the parallel sliding bolts 22 to their inoperative or withdrawn positions, thereby releasing the second window sash. Whenever it is desired to release the parallel sliding bolts 22 and permit them to be carried out to their extended or operative positions, the pinion 39 must be disengaged from the sliding racks 37 by forcing inwardly the single operating bolt 40.

The single operating bolt 40 may be readily secured in its innermost or inoperative position by slight turn thereof in the proper direction. It is also to be understood that the single operating bolt 40 cannot be forced inwardly or returned to its outermost position except when the parallel sliding bolts 22 are either in their full extended or operative positions or are drawn inwardly to their withdrawn or inoperative positions. This assures a full operation of the lock before releasing the single operating bolt 40 from the other operative parts of the lock.

While the preferred embodiment of the invention has been disclosed, it is to be understood that minor changes in the details of construction, combination and arrangement of co-operating elements may be resorted to within the scope of what is claimed without departing from the spirit of the invention.

What I claim as new is:

1. A lock comprising a casing; parallel sliding bolts operable in said casing and adapted to project from the same when extended to operative position; means for drawing said parallel sliding bolts into said casing; rack and pinion mechanism for operating the last mentioned means; a single operating bolt; the pinion of said rack and pinion mechanism being carried by said single operating bolt; said bolt being adapted to be moved to disengage the pinion from the racks of said rack and pinion mechanism; and means to retain said single operating bolt in one position with the pinion disengaged from said racks.

2. A lock comprising a casing; parallel sliding bolts operable in said casing; said parallel sliding bolts working through one side

member of the casing; guide means for said parallel sliding bolts; said parallel sliding bolts having elongated parallel slots and flanges formed around said slots; bolt actuating members pivotally mounted within said casing and having projecting portions extending between said flanges and into the slots of said parallel sliding bolts for operation on the walls of said slots to draw the parallel sliding bolts inwardly when the bolt actuating members are operated in one direction; a controlling member for said bolt actuating members adapted to be retained in inoperative position, at times; and means to resiliently retain said parallel sliding bolts in one position.

3. A lock comprising a casing; parallel sliding bolts operable in said casing; said parallel sliding bolts working through one side member of the casing; means for drawing said bolts inwardly; means for resiliently retaining said bolts in extended position; the withdrawing means for drawing the bolts inwardly being pivotally mounted; sliding racks having connection with the said withdrawing means for operating the same; a controlling member; a pinion carried by said controlling member for operation on said racks to control the latter; means for resiliently retaining the controlling member in operative position; said controlling member being adapted to be moved to inoperative position to disengage the pinion from the racks and release the latter; and means to retain the controlling member in inoperative position, at times.

4. A lock comprising a casing; parallel sliding bolts operable in end portions of said casing; said parallel sliding bolts working through one side member of the casing; guide means for said parallel sliding bolts; said parallel sliding bolts having elongated transverse slots and flanges formed around said slots; bolt actuating members pivotally mounted within said casing and having projecting portions extended between said flanges and into the slots of said parallel sliding bolts for operation on the walls of said slots to draw the parallel sliding bolts inwardly when the bolt actuating members are operated in one direction; sliding racks mounted in said casing; said casing having guide grooves for said sliding racks; operative connections between said sliding racks and said bolt actuating members; operating means for said sliding racks; said operating means being adapted to be disengaged from said sliding racks and held in disengaged position and means operating on the bolt actuating members to cause the latter to force the parallel sliding bolts outwardly when the sliding rack operating means is disengaged.

5. A lock comprising a casing; parallel sliding bolts operable in end portions of said casing; said parallel sliding bolts working through one side member of the casing; guide means for said parallel sliding bolts; said parallel sliding bolts having elongated transverse slots and flanges formed around said slots; bolt actuating members pivotally mounted within said casing and having projecting portions extending between said flanges and into the slots of said parallel sliding bolts for operation on the walls of said slots to draw the parallel sliding bolts inwardly when the bolt actuating members are operated in one direction; sliding racks mounted in said casing; said casing having guide grooves for said sliding racks; operative connections between said sliding racks and said bolt actuating members; a main operating bolt; means for mounting said main operating bolt transversely in the centre of said casing; a pinion carried by said main operating bolt and normally engaged with said sliding racks; said pinion serving, when the main operating bolt is rotated in one direction, to draw the sliding racks from the ends of said casing toward the centre thereof and thereby operate the bolt actuating members to draw inwardly the parallel sliding bolts; means carried by the mounting means for said main operating bolt to prevent rotation of the main operating bolt in the reverse direction; means for resiliently retaining said operating bolt in one position transversely of the casing; said main operating bolt being adapted to be forced in the opposite direction transversely of the casing to disengage the same from said sliding racks; means for retaining said main operating bolt in the last mentioned position; and means for operation on said bolt actuating members to move the latter together with the sliding racks in a reverse direction and cause said bolt actuating members to force outwardly the parallel sliding bolts when the pinion is disengaged from said sliding racks.

In testimony whereof, I affix my signature.

JOHN G. BERANGER.