

R. R. REYNOLDS.
WINDOW LOCK.
APPLICATION FILED MAR. 30, 1909.

955,476.

Patented Apr. 19, 1910.

2 SHEETS—SHEET 1.

Fig. 1.

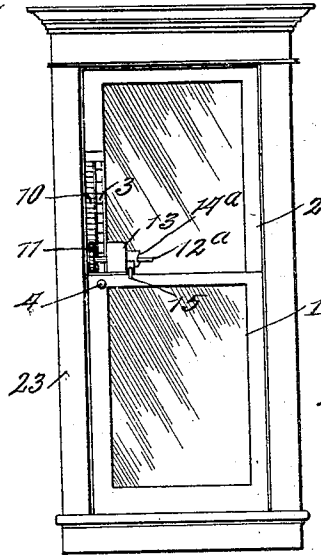


Fig. 2.

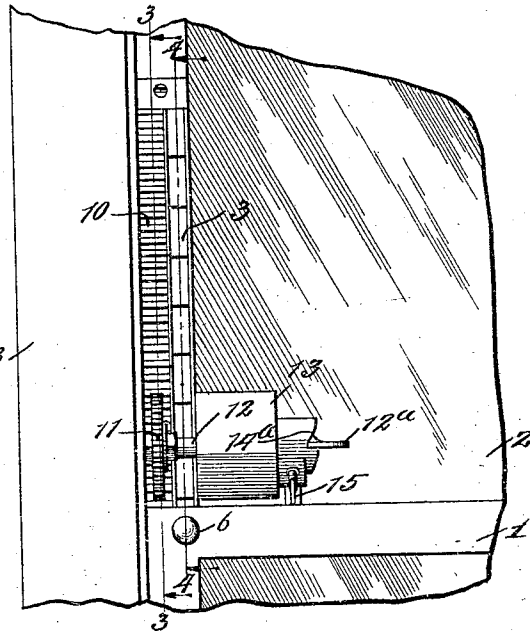


Fig. 3.

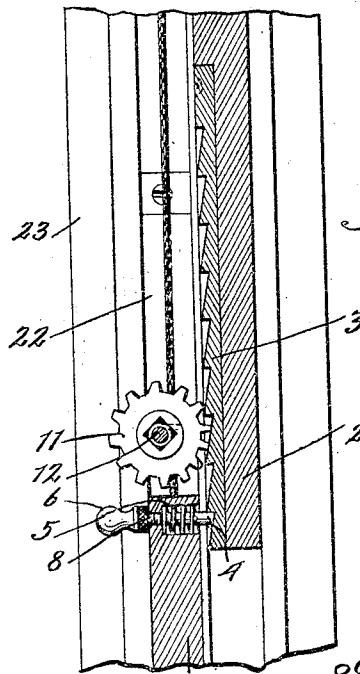
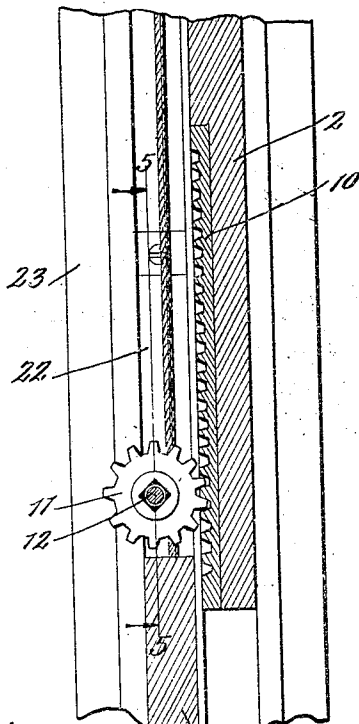


Fig. 4.

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2 SHEETS—SHEET 2.

Fig. 9.

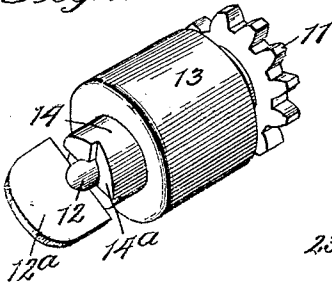


Fig. 6.

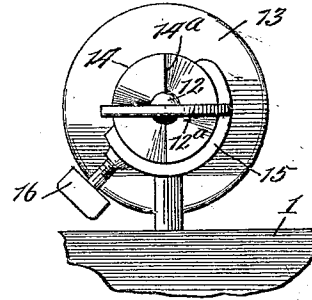


Fig. 5.

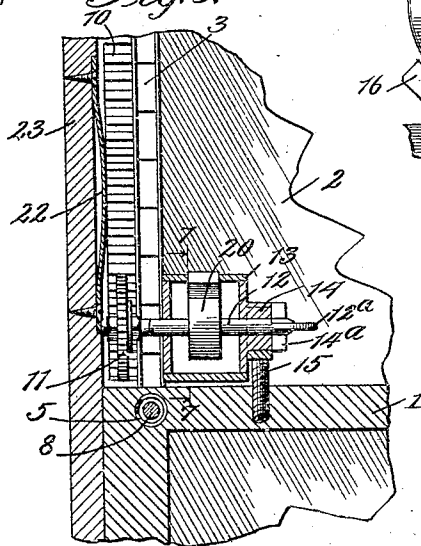


Fig. 7.

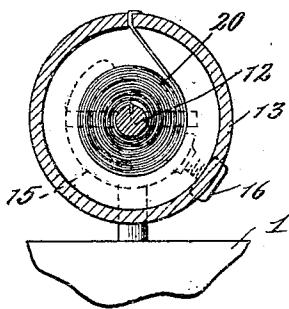
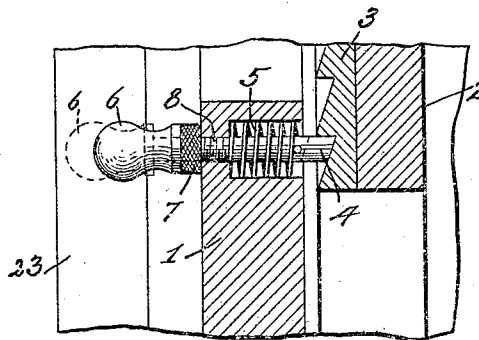


Fig. 8.



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UNITED STATES PATENT OFFICE.

ROBERT R. REYNOLDS, OF CHICAGO, ILLINOIS.

WINDOW-LOCK.

955,476.

Specification of Letters Patent.

Patented Apr. 19, 1910.

Application filed March 30, 1909. Serial No. 486,708.

To all whom it may concern:

Be it known that I, ROBERT R. REYNOLDS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Window-Locks, of which the following is a specification.

My invention relates to window locks and the object of the invention is, first, to provide means whereby the lower sash may be raised or the upper sash lowered to any desired position relatively to each other and be held there automatically. Second, to provide a ratchet device whereby when the lower sash is being lowered from a raised position it must automatically be held in the lowest position reached by it and similarly when the lowered upper sash is raised it will be held in the highest position reached by it. Third, to provide means whereby the ratchet device may be held in non-operative position. Fourth, to provide means whereby when the upper sash is in partially lowered position any attempted raising of the lower sash will cause the upper sash to be automatically raised to highest closed position. Fifth, to provide certain details of construction which will be hereinafter more specifically described and claimed.

Referring to the accompanying drawings which show the preferred form of embodiment of my invention, Figure 1 is a front view of a sash with the lock and closing device in position; Fig. 2 is similar to Fig. 1 with the parts drawn to a larger scale; Fig. 3 is a sectional view taken on the line 3—3 Fig. 2; Fig. 4 is a sectional view taken on the line 4—4 Fig. 2; Fig. 5 is a sectional view taken on the line 5—5 Fig. 3; Fig. 6 is an end view of the device for automatically raising the upper sash, the device being viewed from its right end as shown in Fig. 2; Fig. 7 is a sectional view of the closing device taken on the line 7—7, Fig. 5; Fig. 8 is a sectional view of the ratchet device, the view being similar to the one shown in Fig. 4 but drawn to an increased scale; and Fig. 9 is a perspective view of the chief operating portions of the self-closing mechanism. Similar numerals refer to similar parts throughout the several views.

In the form of window selected to illustrate the invention the lower sash slides in front of the upper sash 2, this being the construction commonly employed in the United States. Secured to the front of the

upper sash is a ratchet 3 adapted to be engaged by a catch 4 mounted in the lower sash. The spring 5 is so arranged in the lower sash as to normally press the catch toward the ratchet, and the teeth of the ratchet are so arranged that when the upper sash is raised or the lower sash lowered, the catch will slip over the teeth of the ratchet but will prevent movement of the parts in the opposite direction. As a result of this construction the lower sash may be securely held in any desired elevation or the sash may be lowered to any extent desired and the occupant of the apartment is assured that the only change in relation of the two sash an intruder can cause will be to decrease and not increase the space available for entrance into the apartment. Another advantage of this construction is that when the upper sash is partially lowered it may be raised by merely raising the lower sash thus rendering it unnecessary for the operator to reach for the upper sash or employ a window pole. After the upper sash is raised, the lower sash may be lowered without disturbing it and the lower sash will automatically become locked in lowest position and at the same time hold the upper sash locked in raised position.

A head 6 is provided on the catch 4 for withdrawing it from the ratchet to permit the lower sash to be raised independently of the upper sash or the upper sash to be lowered independently of the lower sash. Said catch may be held in retracted position by means of a nut screwing onto the threaded portion 8 of the catch, as best shown in Fig. 8. By retracting the catch and then screwing the nut down against the front of the lower sash the catch will remain retracted and will clear the ratchet 3 so that both sash may be freely moved independently of each other.

I will now describe the mechanism for automatically closing the upper sash in case an attempt is made by an unauthorized person to raise the lower sash. The upper sash is provided with a toothed rack 10, preferably located alongside of the ratchet 3 and cast integral therewith. A toothed pinion 11 mounted on the lower sash in a manner to be shortly described is adapted to mesh with said rack to cause the latter and the sash to which it is secured to rise when said pinion is rotated. Said pinion is rigidly secured to the shaft 12 in any suitable manner. In the

construction here selected said pinion is threaded at the center and screws onto the threaded end of the shaft where it is locked by means of lock nuts as shown. Said shaft
 5 is supported in horizontal position in a box or casing 13 and is both rotatable and longitudinally movable. In order to permit longitudinal movement of said shaft without permitting the pinion to become disengaged from its rack 10, the face of the rack
 10 is preferably made of extra width, as clearly shown in Figs. 2 and 5. The casing 13 may assume various forms without exceeding the scope of the invention. In the form here
 15 shown the inner end 14 of said casing is of reduced diameter to permit it to fit into the stand 15 rigidly secured to the top of the lower sash. Said casing is removably held in said stand by means of the set screw 16.
 20 The means for supporting the spring casing 13 may be considerably varied without departing from the spirit of the invention; it is desirable, however, that the mounting should be such that said casing and parts
 25 supported thereby should be removable.

A coiled spring 20 is located within the casing, one end being secured to said casing and the other end to the shaft 12. The arrangement is such that when said spring is
 30 wound up it tends to rotate shaft 12 in such direction as to raise the upper sash. Said sash is normally prevented from rotating by means of a ratchet 14^a formed on the inner
 35 end of the portion 14 of the casing 13. The teeth of said ratchet engage the head 12^a of the shaft 12, as clearly shown in Fig. 9. The teeth of said ratchet are beveled so that the shaft may be rotated in one direction to
 40 wind the spring but will be held from rotation in the opposite direction when the shaft is shifted to where said ratchet teeth may engage said head 12^a. The cam plate 22 is secured to the window casing 23 and is adapted
 45 to disengage the head 12^a from the ratchet 14^a and thus release the spring 20 to permit it to cause the raising of the window.

The operation of the catch 4 and the ratchet 3 has been explained. The mechanism for automatically closing the upper sash
 50 operates as follows: Let it be assumed that the lower sash is down and the upper sash is lowered to any extent desired. Let it be assumed that under these conditions an unauthorized person attempts to take advantage
 55 of the lowered position of the upper sash to raise it and the lower sash to thereby obtain sufficient opening beneath the lower sash to gain entrance to the apartment. As
 60 the upper and lower sash are in locked relation with each other they may both be raised a slight distance perhaps before the closing device comes into action, depending upon the location of the cam plate 22. As
 65 soon as a slight upward movement of the

lower sash has occurred, however, the cam plate acting upon the end of the shaft 12 will shift said shaft in a direction to release it from the ratchet 14^a, whereupon the
 70 spring 20 immediately rotates said shaft and the pinion 11 thereon and causes the upper sash to rapidly move to highest closed position. This prevents further raising of the
 75 lower sash on account of the action of the catch 4. As a result the would-be intruder is not only prevented from raising the lower sash to any appreciable extent but is prevented from making any attempt to enter the apartment over the top of the upper
 80 sash.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. Means for automatically closing one window sash when the companion sash is
 85 moved toward open position, said means comprising spring-actuated, sash-closing mechanism, holding means for holding said closing mechanism non-operative and a stationary cam operative upon said holding
 90 means when the latter are moved for releasing said closing mechanism.

2. Means for automatically closing one window sash when the companion sash is
 95 moved toward open position, said means comprising a rack on one sash, a pinion on the companion sash, a spring for rotating said pinion in a direction to close the sash which carries said rack, releasable holding
 100 means for normally holding said spring, and a stationary cam for automatically releasing said holding means when the latter is moved in a vertical direction.

3. Means for automatically closing one window sash when the other sash is moved
 105 toward open position, said means comprising a rack on the first sash, a shaft on the second sash, a pinion on said shaft, a spring for rotating said shaft and pinion, a head on said shaft, a ratchet adapted to cooperate with said head for preventing the
 110 shaft and pinion from rotating, and a stationary cam operative upon said shaft to automatically release said head from said ratchet when said shaft and the sash on
 115 which it is mounted are moved in a vertical direction.

4. The combination with the upper and lower vertically movable sashes, of a rack
 120 upon the upper sash, a pinion adapted to mesh therewith, a horizontal rotatable shaft mounted upon the lower sash and carrying said pinion, a spring for rotating said shaft
 125 in a direction to raise the upper sash, a ratchet and detent for holding said shaft and a cam on said casing for releasing said detent.

5. The combination with the upper and lower vertically movable sash, of a rack
 130 upon the upper sash, a pinion adapted to

mesh therewith, a horizontal rotatable shaft
mounted upon the lower sash and carry-
ing said pinion, a spring carried by the
lower sash and adapted to rotate said shaft
5 in a direction to raise the upper sash, means
for holding said shaft from rotation and a
stationary cam operative upon said shaft to
release the same.

6. The combination with the casing, and
10 upper and lower sash, of a rack secured to
the upper sash, a pinion adapted to mesh
with said rack, a horizontally rotatable
longitudinally shiftable shaft adapted to ro-
tate said pinion, a spring secured to the

lower sash for rotating said shaft, a ratchet 15
for holding said shaft, and a cam secured to
the sash casing and adapted to shift said
shaft when the latter is raised to thereby
release said shaft from its holding ratchet
substantially as described. 20

In witness whereof, I have hereunto sub-
scribed my name in the presence of two
witnesses.

ROBERT R. REYNOLDS.

Witnesses:

HOWARD M. COX,
C. J. CHRISTOFFEL.