



# UNITED STATES PATENT OFFICE.

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## LOCK.

1,162,406.

Specification of Letters Patent.

Patented Nov. 30, 1915.

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*To all whom it may concern:*

Be it known that I, SAMUEL SEGAL, a citizen of the United States, and resident of the city of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Locks, of which the following is a specification.

This invention relates to locks, and particularly to locks which may be used upon swinging doors in certain convenient situations, as for example in connection with an outside house door whereon it may be secured upon its interior side to serve as a night lock. Locks used in such or similar situations are susceptible to being picked or dislocated by a burglar reaching thereto with a jimmy through the exterior of the door.

The present invention is an improvement upon the lock disclosed in the Letters Patent No. 1,065,848 granted to me June 24, 1913, for a reissue of which my patent application, Serial No. 19,566, is now pending.

The principal object of my present invention is to provide the lock with simple, inexpensive, and efficient means for automatically throwing the lock-bolt into locking engagement with its keeper upon closing of the door.

Other objects and advantages will hereinafter appear.

In the accompanying drawings, Figure 1 is a sectional elevation of the lock showing the disposition of its parts when in unlocked state. Fig. 2 is a sectional plan view of the lock shown in Fig. 1. Fig. 3 is a view, in a reduced scale, similar to Fig. 1, but showing the disposition of the parts of the lock when in locked state.

A cast-metal casing 1 containing the locking mechanism and constituting the lock body proper is secured, by means of screws 2, against the inner side of a swinging door 3 which opens into the interior of a room and swings about a vertical axis of its hinges in the direction of the arrow, Fig. 2. A keeper 4 for the lock is secured to the door-frame 5 by means of screws 6. The tumbler-barrel 8 of the lock mechanism passes through the door 3 whereby a key 9 may be inserted from the exterior to unlock the door, while at the inner side of the door it may be unlocked by turning a knob 10.

When the lock-casing 1 is secured in prop-

erly alined position against the door 3 its end-portion 11 which is entirely incased extends beyond the door-edge 12 and overlaps the door-frame 5 and the keeper 4. Within the extending end-portion 11 is contained a pair of cylindrical bolts 13 which are connected by brackets 14 to a post 15. Said cylindrical bolts are disposed vertically and have their axes concentric, and they fit against the wall of the extending casing-portion 11 which at its outermost side is convexly formed to follow the configuration of the bolts. A frame or plate 16 forming part of the post 15 extends therefrom into the interior of the casing 1. Said frame is provided with a groove 17 fitting over a vertical track 18 cast upon the wall of casing 1, and the connecting post 15 is fitted slidably between guiding ledges 19 cast upon the casing-wall, whereby the bolts 13 together with the post 15 and frame 16 are thus guided at all sides against lateral displacement and they may be therefore shifted in a vertical direction upwardly and downwardly, from the position shown in Fig. 1 to that shown in Fig. 3 and back.

Upon the frame 16 is pivoted a tumbler-pawl 20 at 21 from where it extends vertically downward and bears against a projection 22 formed upon frame 16, toward which projection said pawl is normally pressed by a leaf spring 23 fixed to its pivot head 24 and leaning against a pin 25 on frame 16. The lower part of the pawl 20 is provided with a ledge 26 which abuts against a lug 27 of the casing-wall when the bolts 13 are disposed in their upward position, by which means said bolts together with the frame 16 and the parts dependent therewith are maintained in their elevated state shown in Fig. 1. A lever 28 fulcrumed at 29 upon frame 16 has a pin 30 at the extremity of its arm 31 passing into a slot 32 formed in pawl 20 adjacent its ledge 26 and extending obliquely therefrom. The other arm 33 of said lever extends upwardly from fulcrum 29 and has its end-portion 34 bent right angularly and its extremity provided with a beveled head 35 that projects outside of the casing. Pressing upon the head 35 toward the left, as viewed in the drawing, rocks the lever 28 and causes its pin 30 to engage the pawl 20 and swing it toward the right about pivot 21, thereby releasing the locking-ledge 26 from the lug 27 and rendering the bolts 13

and the parts dependent therewith free to move downwardly. And being thus released the bolts are caused to descend automatically to the position shown in Fig. 3 by means of a spring 36 having one end thereof secured to the frame 16 and its opposite end to the rim of casing 1. When the bolts 13 are disposed in their lowered position the upper edge of ledge 26 is retained against the lower edge of lug 27 whereby the bolts are maintained locked in the downward position.

A plate 37 is secured to the shank of knob 10 and is provided with opposite arms 38 that are normally maintained in vertical disposition, as shown, by means of opposite springs 39, secured to pins 40 upon casing 1, pressing against opposite projections 41 formed on said plate. By this means, also, a semicircular snap movement may be imparted to the arms 38 in the direction of the arrow, Fig. 1, upon turning of the knob 10 half a revolution, said springs automatically aligning said arms in vertical disposition at each half turn of the knob. In order to restore the bolts 13 to their elevated position, the knob 10 is turned for half a revolution and imparts its movement to the arms 38. The lower one of said arms is thereby caused to enter between the ledge 22 and another ledge 42 formed on frame 16, and while progressing on its stroke the arm strikes the pawl 20 against a projection 43 thereof thereby causing the pawl to swing toward the right and to become released from the lug 27. And simultaneously the arm 38 carries the frame 16 and parts dependent therewith upwardly contrary to the pull of spring 36 and raises the bolts 13 back to the position shown in Fig. 1. When the bolts 13 are thus restored to elevated position the pawl 20 is returned by its spring 23 in position to bear against the projection 22 and to abut against the lug 27 for maintaining said bolts in elevated position, and the lever 28 is restored to its previous disposition. An arm 44 fixed to a bar 45 secured to the barrel 8 serves for raising the bolts 13 to elevated position by turning of the key 9. Turning of the knob 10 or the key 9 thus raises the bolts to locked elevated position, and pressing of the lever-head 35 into the casing 1 automatically lowers the bolts to locked lowered position.

The keeper 4, preferably made of cast-metal, is provided with an angle portion 46 comprising legs 47, 48 which are fitted against the door-frame 5 and firmly secured thereto by the screws 6. When the keeper 4 is properly fitted in position its leg 47 is fitted into a recess 47<sup>a</sup> in the inner side of the door-frame 5 and the leg 48 thereof is fitted into a recess 49 formed in the edge 50 of said frame, so that the outer surfaces of said legs are flush with the surfaces of the frame 5. A pair of ears 51 having central

openings 52 and constituting the staple portions of the keeper 4 are formed upon the keeper-leg 47 adjacent the leg 48. Said ears have their openings 52 concentric with each other, and the diameters of said openings are adaptable to fittingly receive the bolts 13. Upon closing of the door 3 both of the ears 51 enter into the end-portion 11 of the lock-casing 1 through notched openings 53 provided in the side 11<sup>a</sup> of said end-portion adjacent said door, which notched openings may, as here shown, extend around the remaining sides 11<sup>b</sup>, 11<sup>c</sup> of the end-portion 11. And when securing the keeper 4 in proper position in the installation of the lock its ears 51 are alined in such manner that when entering the receiving openings 53 in casing 1 the centers of the ear openings 52 will register with the joint axes of the bolts 13, whereby upon said bolts being immediately thereafter shifted downwardly they will enter into the openings 52 as shown in Fig. 3. Turning of the knob 10 or key 9 to dispose the bolts 13 in the elevated position shown in Fig. 1 causes the door 3 to be maintained in unlocked state so that it may be freely opened or closed; and when it is desired to lock the door it is first closed, and thereupon the upper ear 51 strikes the beveled head 35 of lever 28 and presses it within the casing 1, thereby momentarily causing the bolts 13 to descend into the ear-openings 52 in the position shown in Fig. 3.

It will be noted that when one of the arms 38 or the arm 44 is turned to raise the bolts for unlocking the door while it is in closed position, said bolts would tend to immediately drop back into locking engagement within the ear-openings 52, for the reason that the upper ear 51 still continues to retain the lever-head 35 within the casing 1, Fig. 2. In order to avoid this objection a detent 54 is pivoted upon the frame 16 and has one end 55 thereof lodged within a notch 56 provided in projection 43 of pawl 20, so that while the lever-head 35 is retained within the casing by the keeper-ear 51 and the pawl 20 is consequently disposed in swung position toward the right the other end 57 of detent 54 is caused by said pawl to be disposed in the path of the arm 38 or 44, as indicated by the dash and dot lines. Said arm being thereby arrested and prevented from completing its stroke it binds against the projection 42 of frame 16 and in this manner retains the bolts 13 in raised unlocked position during the time that the keeper-ear continues to press against the head 35. And when the door is opened and moved away from the keeper the lever-head 35 projects itself fully outward and at once permits the pawl 20 to dispose the detent 54 in the position shown to release the arm 38 or 44 for completing its stroke. Upon the door being closed again the keeper actuates

the lever-head 35 to momentarily cause the locking mechanism to automatically shift the bolts downwardly into locking engagement with the ears 51.

5 In their unlocked state the bolts 13 are entirely concealed and incased, Fig. 1, by the extending end-portion 11 of the casing 1, and when said bolts are interlocked with the keeper 4 their middle portions 58 are surrounded by the metal of ears 51 while their upper and lower extremities 59 are surrounded and incased by the metal of the casing-end 11 adjacent to said ears. The bolts 13 are therefore strongly protected by the completely incasing metal of the casing-end 11 and of the ears 51, and should any attempt be made to elevate or otherwise dislocate said bolts, by reaching thereto with a jimmy through the exterior of the door, said incasing metal would prevent access to the bolts and frustrate such attempt. Should it be attempted to bend away or dislocate the keeper-ears 51 or the bolts 13 laterally the same would be prevented on account of the projection of the upper and lower bolt extremities 59 within the casing-end 11 and of their incasement thereby. The interlocking of the casing-end 11, the keeper-ears 51, and the bolts 13 will prevent any attempted up and down dislocation of the lock or keeper. The keeper-legs 47, 48 secured to the inner side and edge of the door-frame 5 will also conduce toward the prevention of attempted dislocation of the keeper or reaching to the bolts 13 through the outer side of the door. It will be evident that by means of this lock construction any other means of picking or dislocation of the lock by jimmying will be prevented and burglarizing or breaking in frustrated.

The automatic interlocking of the bolts 13 with the keeper-ears 51 upon closing of the door adds greatly to the convenience, safety, and general utility of the lock.

45 Variations may be resorted to within the scope of the invention.

Having thus described my invention, I claim:—

1. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the door overlapping said keeper and having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings and to interlock said casing with said ear, said mechanism including means to maintain said bolt out of said ear, a spring for moving said bolt into locked position, and means actuated by said keeper upon the closing of the door to release said

maintaining means and permit said spring to move said bolt into said-ear for interlocking said casing with said ear.

2. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings and to interlock said casing with said ear, said mechanism including means to maintain said bolt out of said ear, and means actuated by said keeper upon the closing of the door to release said maintaining means for permitting said bolt to move into said ear to interlock said casing with said ear.

3. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings, and to interlock said casing with said ear, said mechanism including a pawl to maintain said bolt out of said ear, a spring for moving said bolt into locked position, and a lever actuated by said keeper upon the closing of the door releasing said pawl to permit said spring to move said bolt into said ear to interlock said casing with said ear.

4. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings, said mechanism including a pawl to maintain said bolt out of said ear, a spring for moving said bolt into locked position, said pawl having a slot, a lever having one end engaging said slot and its other end projecting within said opening, and said projecting end of the lever being pressed by said keeper upon the closing of the door to swing said lever to release said pawl for permitting said spring to move the bolt into said ear.

5. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said

5 casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt inclosed by said portion  
 10 adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings, said mechanism including a pawl pivoted on said bolt to maintain it out of said ear, a spring for moving said bolt into locked position, a lever pivoted on said  
 15 bolt having one end thereof engaging said pawl and its other end projecting outside of the casing, and said projecting end of the lever being pressed by said keeper upon the closing of the door to swing said lever to release said pawl for permitting said spring to move the bolt into said ear.

6. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-  
 20 frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt inclosed by said portion adaptable to move in an out of said ear in a direction  
 25 parallel to the axis about which the door swings, said mechanism including a pawl pivoted on said bolt to maintain it out of said ear, a spring for moving said bolt into locked position, a lever pivoted on said bolt  
 30 adaptable to swing in a plane parallel to the plane in which the bolt moves, said lever having one end thereof engaging said pawl and its other end projecting within said opening, and said projecting end of the lever  
 35 being pressed by said keeper upon the closing of the door to swing said lever to release said pawl for permitting said spring to move the bolt into said ear.

7. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-  
 40 frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt inclosed by said portion  
 45 adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings, said mechanism including a pawl pivoted on said bolt to maintain it out of said ear, a spring for moving said bolt into locked position, a lever pivoted on said  
 50 bolt having one end thereof engaging said pawl and its other end projecting outside of the casing, said projecting end of the lever being pressed by said keeper upon the closing of the door to swing said lever to release said pawl for permitting said spring to move the bolt into said ear, an arm to restore said bolt to unlocked position, and a detent on  
 55 said bolt actuated by said pawl arresting said arm to cause it to hold the bolt in unlocked state while said projecting lever-end remains pressed by said keeper.

8. A swinging-door lock having locking mechanism, a casing therefor secured to the

side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt extending beyond the edge  
 70 of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings, said mechanism including a pawl to maintain said bolt  
 75 out of said ear, a spring for moving said bolt into locked position, a lever actuated by said keeper upon the closing of the door releasing said pawl to permit said spring to move said bolt into said ear, an arm to restore said bolt to unlocked position, and means actuated by said pawl arresting said arm to cause it to hold the bolt in unlocked position while said lever remains actuated  
 80 by said keeper.

9. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the  
 85 door having an opening adapted to receive said ear, a bolt extending beyond the edges of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis  
 90 about which the door swings, said mechanism including means to maintain said bolt out of said ear, means actuated by said keeper upon the closing of the door to release said maintaining means for permitting  
 95 said bolt to move into said ear, means to restore said bolt to unlocked position, and means actuated by said maintaining means to cause said restoring means to hold the bolt in unlocked position while said releasing means remains actuated by said keeper.  
 100

10. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door  
 110 frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adaptable to move in and out of  
 115 said ear in a direction parallel to the axis about which the door swings, said mechanism including a pawl to maintain said bolt out of said ear, a spring for moving said bolt into locked position, a lever actuated by  
 120 said keeper upon the closing of the door releasing said pawl to permit said spring to move said bolt into said ear, means to restore said bolt to unlocked position, and means actuated by said pawl to cause said restoring  
 125 means to hold the bolt in unlocked position while said lever remains actuated by said keeper.

11. A swinging-door lock having locking mechanism, a casing therefor secured to the

side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the door having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis about which the door swings, said mechanism including means to maintain said bolt out of said ear, means actuated by said keeper upon the closing of the door to release said maintaining means for permitting said bolt to move into said ear, means to restore said bolt to unlocked position, and means to cause said restoring means to hold the bolt in unlocked position while said releasing means remains actuated by said keeper.

12. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having ears, a portion of said casing extending beyond the edge of the door having openings adapted to receive said ears, a plurality of connected bolts extending beyond the edge of the door and inclosed by said extending casing portion adapted to move vertically in and out of said ears and to interlock said casing with said ears, said mechanism including means to maintain said bolts out of said ears, and means actuated by said keeper upon the closing of the door to release said maintaining means for permitting said bolts to move into said ears to interlock said casing with said ears.

13. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having ears, a portion of said casing extending beyond the edge of the door having openings adapted to receive said ears, a plurality of connected bolts extending beyond the edge of the door and inclosed by said extending casing portion adapted to move vertically in and out of said ears, and to interlock said casing with said ears, said mechanism including a pawl to maintain said bolts out of said ears, a spring for moving said bolts into locked position, and a lever actuated by said keeper upon the closing of the door releasing said pawl to permit said spring to move said bolts into said ears to interlock said casing with said ears.

14. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having ears, a portion of said casing extending beyond the edge of the door having openings adapted to receive said ears, a plurality of connected bolts inclosed by said portion adapted to move vertically in and

out of said ears, said mechanism including a pawl pivoted to said bolts to maintain them out of said ears, a spring for moving said bolts into locked position, a lever pivoted to said bolts having one end thereof engaging said pawl and its other end projecting outside of said casing, and said projecting end of the lever being pressed by said keeper upon the closing of the door to swing said lever to release said pawl for permitting said spring to move the bolts into said ears.

15. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having ears, a portion of said casing extending beyond the edge of the door having openings adapted to receive said ears, a plurality of connected bolts extending beyond the edge of the door and inclosed by said extending casing portion adapted to move vertically in and out of said ears, said mechanism including means to maintain said bolts out of said ears, means actuated by said keeper upon the closing of the door to release said maintaining means for permitting said bolts to move into said ears, means to restore said bolts to unlocked position, and means actuated by said maintaining means to cause said restoring means to hold the bolt in unlocked position while said releasing means remains actuated by said keeper.

16. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having ears, a portion of said casing extending beyond the edge of the door having openings adapted to receive said ears, a plurality of connected bolts extending beyond the edge of the door and inclosed by said extending casing portion adapted to move vertically in and out of said ears, said mechanism including a pawl to maintain said bolts out of said ears, a spring for moving said bolts into locked position, a lever actuated by said keeper upon the closing of the door releasing said pawl to permit said spring to move said bolts into said ears, means to restore said bolts to unlocked position, and means actuated by said pawl to cause said restoring means to hold the bolts in unlocked position while said lever remains actuated by said keeper.

17. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of said door having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adapted to move vertically through said ear and to interlock said casing with

5 said ear, said mechanism including a pawl to maintain said bolt out of said ear, a spring for moving said bolt into locked position, and a lever actuated by said keeper upon the closing of the door releasing said pawl to permit said spring to move said bolt into said ear to interlock said casing with said ear.

10 18. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of said door having  
15 an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adapted to move vertically through said ear, said mechanism including means to  
20 maintain said bolt out of said ear, means actuated by said keeper upon the closing of the door to release said maintaining means for permitting said bolt to move into said ear, means to restore said bolt to unlocked  
25 position, and means actuated by said maintaining means to cause said restoring means to hold the bolt in unlocked position while said releasing means remains actuated by said keeper.

30 19. A lock for a door swinging about a vertical axis having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of said door having  
35 an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing por-

tion adapted to move vertically through said ear, said mechanism including a pawl to  
40 maintain said bolt out of said ear, a spring for moving said bolt into locked position, a lever actuated by said keeper upon the closing of the door releasing said pawl to per-  
45 mit said spring to move said bolt into said ear, means to restore said bolt to unlocked position, and means actuated by said pawl to cause said restoring means to hold the bolt in unlocked position while said lever remains actuated by said keeper. 50

20. A swinging-door lock having locking mechanism, a casing therefor secured to the side of the door, a keeper secured to the door-frame having an ear, a portion of said casing extending beyond the edge of the  
55 door having an opening adapted to receive said ear, a bolt extending beyond the edge of the door and inclosed by said extending casing portion adaptable to move in and out of said ear in a direction parallel to the axis  
60 about which the door swings and to interlock said casing with said ear, said mechanism including means to maintain said bolt out of said ear, and said means adaptable to be released by said keeper upon closing  
65 of the door to permit said bolt to move into said ear for interlocking said casing with said ear.

Signed at the city of New York, in the county of New York, and State of New York, this 14th day of April, A. D. 1915. 70

SAMUEL SEGAL.

Witnesses:

CHAS. W. LA RUE,  
B. ROMAN.