

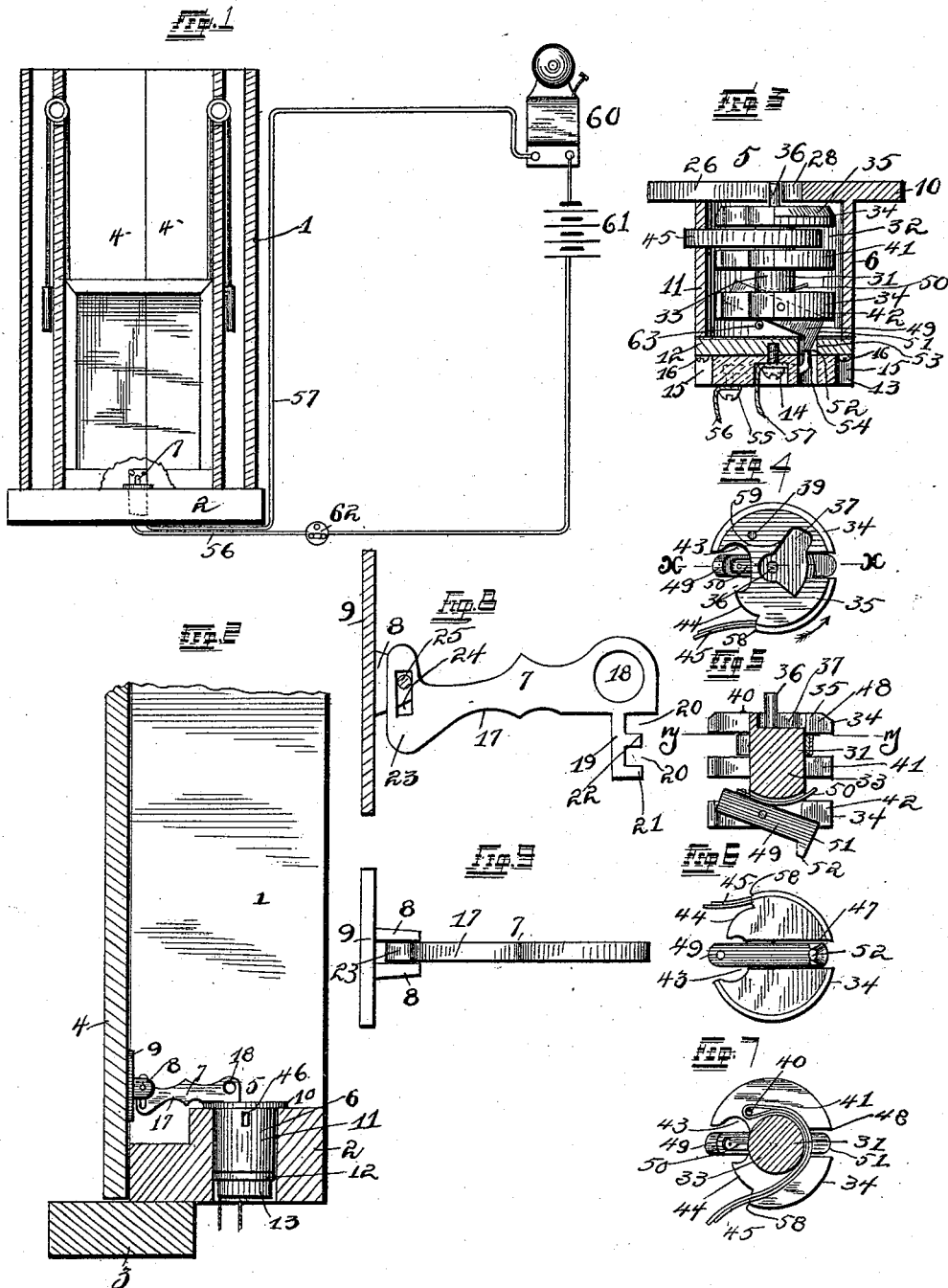
(No Model.)

2 Sheets—Sheet 1.

F. SIMONS.  
LOCK.

No. 494,446.

Patented Mar. 28, 1893.



Witnesses

Alfred A. Cichow  
Herbert A. Robinson.

Inventor

Frank Simons

By his Attorneys, Hydon & Hydon, Solicitors.

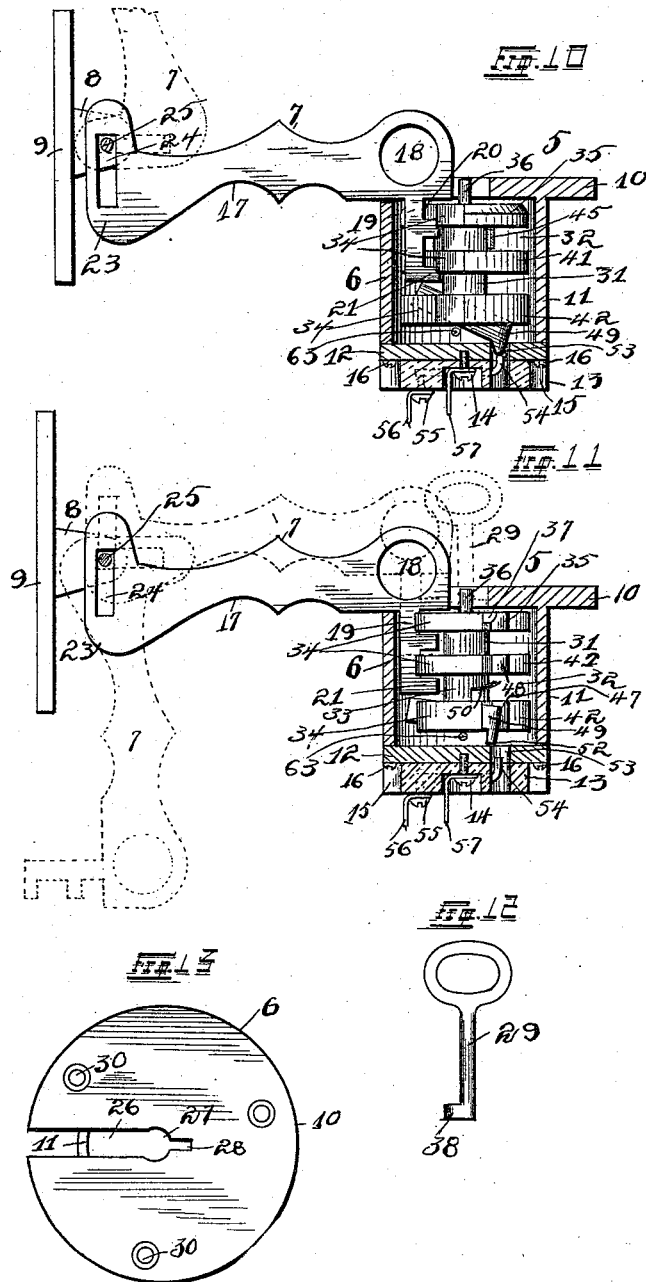
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Inventor  
Frank Simons  
By his Attorneys Higdon & Higdon & Longau

# UNITED STATES PATENT OFFICE.

FRANK SIMONS, OF ST. LOUIS, MISSOURI, ASSIGNOR OF TWO-THIRDS TO  
ARTHUR D. AQUART AND CHARLES FUCHS, OF SAME PLACE.

## LOCK.

SPECIFICATION forming part of Letters Patent No. 494,446, dated March 28, 1893.

Application filed October 22, 1892. Serial No. 449,693. (No model.)

### *To all whom it may concern:*

Be it known that I, FRANK SIMONS, of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Alarm-Locks, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to improvements in an "alarm lock," and consists in the novel arrangement and combination of parts, and its peculiar adaptation for introduction into an electric circuit, as will be more fully hereinafter described and set forth in the claims.

The invention is especially designed for use in inclosures of any kind, for the securing of doors, windows, shutters and any other constructions of this kind. It can be used either with or without electrical alarm connections, being operative in either form. Its peculiar construction absolutely prevents the picking of the lock, and if the lock were unfastened at any time when the electrical connections were on, an alarm would be sounded.

The complete invention combines general features which guarantee the absolute certainty in its operation, and its application being so simple, also aids in its function.

In the drawings: Figure 1 is a vertical sectional view of a window-casing and a diagrammatic view of a bell and battery located in a circuit with a sash lock applied to the window. Fig. 2 is a vertical sectional view of my invention as applied to an ordinary window shutter and showing the shutter and window sill in section. Fig. 3 is a vertical sectional detail view, of the lock when opened and showing the complete electrical connections therewith. Fig. 4 is a top plan view of the lock with the exterior casing removed. Fig. 5 is a vertical detail sectional view, taken on a line X—X in Fig. 4. Fig. 6 is an inverted plan view of the locking mechanism. Fig. 7 is a transverse section taken on a line Y—Y in Fig. 5. Fig. 8 is a side sectional view of the latch. Fig. 9 is a top plan view of the same. Fig. 10 is a vertical sectional view, showing the latch inserted in the lock, but before the same is locked. Fig. 11 is a view similar to Fig. 10, showing the parts locked, the electrical connection broken, and

the latch shown in dotted lines, in several different positions. Fig. 12 is an elevation of the key which is used to unlock the device. Fig. 13 is a top plan view of the lock showing the latch and key slots.

Referring to the drawings: 1 indicates the side of a window-frame, 2 the bottom cross-piece of same, 3 the sill upon which the window-frame rests, and 4 a shutter hinged to the side of said window-frame.

5 indicates the complete lock mechanism inclosed in a casing 6, said casing 6 being set into the cross-piece 2.

7 indicates a latch pivoted between lugs 8 upon a plate 9, said plate 9 being secured to the shutter 4.

The casing 6 consists of a circular plate 10 having a projecting casing or barrel 11, the open end of which is closed by a removable plate 12 which is adapted to be secured thereto by screws. A circular plate of insulating material 13 shown in dot and dash section lines is adapted to be screwed upon the plate 12 by a center screw 14 which also serves as one of the terminal connections for the electric circuit, the insulation plate only being used in case the device is to be used as an alarm.

The insulation plate 13 is provided with cut-out portions 15 in its periphery for the location of the screws 16 which secure the plate 12 to the circular casing 11.

The latch 7 consists substantially of a longitudinal piece of metal 17 provided at one end with a hand-hole 18, and a projecting portion 19 adjacent below same, provided in its outer edge with rectangular openings 20 providing an end projecting lug 21 and a lug 22 intermediate of said lug 21 and the edge of the portion 17. The opposite end 23 of the latch is elongated and provided with a transverse rectangular opening 24 through which is adapted to be placed the pivot 25 secured in the lugs 8 upon the plate 9.

By the peculiar longitudinal form of the opening 24, the latch 7 is designed to attain four different positions; namely the first one shown by dotted lines in Fig. 10 with the latch upward in a vertical position; then comes a horizontal position with the lower end of the slot 24 engaging the pin 25; then by moving

the latch shank 17 downwardly in a vertical direction, the length of the slot 24, with the upper end of same engaging over the pin 25; and lastly comes the depending vertical position, all of which positions are shown by dotted lines in Figs. 10 and 11.

The advantages and uses of the different movements of the latch shank 17, will be more fully hereinafter explained.

10 The top plate 10 of the casing 6 is provided with a slot 26 extending from one side of the periphery of same, inwardly to the center, where it broadens into a portion 27, and thence into a narrow portion 28, the portions 27 and 28 15 serving as a key guide for a key 29 which is used to unfasten the lock, and said plate 10 is also provided with holes 30 adjacent its outer periphery for the insertion of screws to secure the device to any construction.

20 I will now proceed to describe the peculiar construction of the interior locking mechanism 5. It consists essentially of a longitudinal piece of metal 31, substantially circular in cross-section, and provided at equi distances 25 with annular rectangular shaped grooves 32 which leave a central portion 33 as it were upon which the circumferential plates 34 are mounted. The top plate 35 has an upwardly projecting fixed key pin 36 in the center of same, with a curvilinear depression 37 which 30 admits of the operation of the projection 38 upon the key 29. It is also provided with perforation 39 through which a pin 40 projects into the central ring or plate 41. The bottom 35 plate 42, the central plate 41 and the top plate 35 are provided with a curvilinear opening 43 extending from their outer peripheries inwardly to a point substantially even with the central portion 33 of the mechanism, said 40 curvilinear openings being in vertical alignment, and having an adjoining cut out portion 44 which, however, is not as deep as the openings 43, the face presented by these openings, being curvilinear in outline.

45 Between the plates 35 and 41, is located a spring 45 which consists of a piece of flat spring material, doubled with the loop of same over the pin 40, the ends of said spring 45 adapted to protrude through an opening 46 50 in the casing wall 11, and in this connection I desire to state that it is necessary to cut away a small portion of the wood adjacent the point where the ends of the spring protrude, in order to give the same operative room.

55 In the under side of a locking mechanism, and at a point in a line with the curvilinear opening 43, is a slot 47 which coincides with aligned openings 48 in the plates 41 and 35, said openings being in line with the curvilinear opening 43, and substantially rectangular in form. Substantially centrally pivoted in the slot 47 is a spring controlled tumbler 49, having on its under and inner side a spring 50, which is pivoted thereto and operates upon 65 a curvilinear under face of the central portion 33 and its normal tendency is to keep the end 51 down away from the other parts, said

end 51 being provided with a projecting tapered portion 52, at right angles with the body of the tumbler 49. When unlocked, the 70 normal tendency or position of the tapered end 52 is in a hole 53 in the plate 12, and the object of having its sides tapered, is to facilitate the withdrawal of the tumbler 49 from this position, when the device is locked. Se- 75 cured in the insulation plate 13 and extending about half way into said opening 53, is an electrical conducting plate 54, which is properly connected with a screw 55 in said insulation, and which forms the terminal for an 80 electric wire 56, while the screw 14 hereinbefore mentioned, has a wire 57 secured to same and serves as a conductor to the entire lot. The electrical connections will be more fully hereinafter described. 85

The projections 21 and 22 upon the latch are adapted to fit into the grooves 32 when the device is locked, and the depending projection 19, of which the lugs 21 and 22 are a portion, is adapted to be pushed downwardly 90 through the slot 26 in the plate 10 and downwardly through the curvilinear recess 43 in the plates. When down a certain distance, the projection 19 upon the latch strikes the upwardly inclined end of the tumbler 49 the 95 opposite tapered ends 52 of which are in position in the opening 53 and in contact with the electrical conductors 54. As the latch is pushed downwardly the tumbler is compelled to assume a position nearer a horizontal one, 100 and as soon as the projections 21 and 22 are opposite the grooves 32, the spring 45 compels the entire locking mechanism 5 to turn around far enough to prevent the latch from being withdrawn. The length of this turn is 105 limited by the shoulder 58 which terminates the cut out portion 44, and which strikes against the depending projection 19 upon the latch 7.

As before stated, the object of the tapered 110 end 52 is in order to enable the same to be quickly withdrawn from its position in the opening 53 and when the device is locked, this portion is necessarily raised to a point flush with the inner surface of the plate 12, 115 and when the spring 45 compels the interior parts to turn, said end 52 slides around upon the inner surface of said plate 12.

To unlock the device when locked, it is necessary to insert the key 29 over the key point 120 36 with the projection 38 upon same in contact with the face 59 of the curvilinear recess 37, and by turning the entire mechanism in the direction as shown by the arrow in Fig. 4, the parts are turned so that the projection 125 19 will again be in position in the curvilinear recess 43, the tapered end 52 of the tumbler 49 will be in the opening 53, and the tension of the spring 50 operating the same will throw the latch up far enough so that it will not re- 130 lock.

Oftentimes during the day it might be found desirable to simply fasten the door or window, or shutter temporarily and in this case

the projection 19 would only be inserted far enough to engage in the recess 32, it simply staying in this position by its peculiar hooking form.

5 I will now proceed to describe the manner of electrically connecting the lock in an alarm circuit. A bell 60 and battery 61 are connected in a circuit by a wire. The battery connects with the screw 55 by a wire 56 and  
10 the bell 60 with the screw 14 by a wire 57. As will be seen in Fig. 11, when the lock is closed, the contact points 52 and 54 are some distance apart, but as soon as the lock is unfastened, as shown in Fig. 10 the circuit is  
15 completed by the contact of said points 52 and 54 and the bell 60 is necessarily rung by the energizing of its magnets. A switch 62 may be inserted in any of the wires, in order that during the day-time, the circuit may remain broken, and as the switch is of the ordinary single pole pattern, it needs no further description.

I will now proceed to describe the passage of the current through the lock mechanism.  
25 The current enters the plate 12 through the screw 14, and then passes into the casing wall 11 and through the spring 45 and a screw 63 which projects inwardly from said casing wall 11 and is in contact under the lower plate 42,  
30 in order that the interior parts will be securely held in position within the casing. The current passes through the plates and central portion 33 into the tumbler 49. The contact plate 54 is insulated from the plate 12, and  
35 therefore the circuit can only be closed and an alarm rung when the tapered end 52 of of the tumbler block 49 engages said conductor 54.

The object of constructing the latch shank with the slot 24 as herein described, is to allow of a vertical movement in the lock, the same being absolutely necessary as any other movement would not suffice. Its peculiar adaptation for attaining two different vertical positions, is especially desirable as by this means  
45 the latch shank can easily be placed out of the road, when not in use.

The device as herein shown and described, whether connected in an electric circuit, or merely used as a lock, is especially designed for application in any different position and is equally as well operative in a horizontal, vertical or any angle position.

Having fully described my invention, what  
55 I claim is—

1. An improved lock having a locking mechanism comprising a central cylindrical shaped portion provided with projecting annular rims, separated by annular grooves, curvilinear depressions in alignment in the periphery of each of said plates and extending inwardly to said cylindrical central portion, and a smaller curvilinear recess in each of said plates adjoining said larger recesses, substantially as set forth.  
65

2. An improved lock having a locking mechanism located within a casing, a circular plate

surmounting said casing, a removable plate closing the lower aperture of said casing, said locking mechanism having a center cylindrical portion, annular rims extending therefrom, said rims or plates separated by annular grooves, curvilinear recesses in alignment in the peripheries of said annular plates, a transverse groove in the lower of said plates,  
70 a vertically oscillating tumbler block centrally pivoted in said slot, a spring normally holding said tumbler block at an angle with said removable casing plate and the tapering projecting end of which normally engages in  
75 an opening in said removable casing plate, substantially as set forth.  
80

3. An improved lock having a locking mechanism located within a casing, said mechanism having a central portion with projecting annular rims, aligned curvilinear recesses in said rims, annular depressions between said rims, a transverse slot in the lower rim and central portion, a spring controlled vertically oscillating tumbler block centrally pivoted  
85 therein, the normal position of said tumbler block being with one end raised and between the lower and middle plates or rims, and the insertion of a latch shank into one of said curvilinear recesses adapted to push down  
90 said tumbler block and disengage the engagement of the opposite tapered end of said tumbler block in the opening in a removable plate normally and removably secured to said casing, substantially as set forth.  
95 100

4. An improved lock having a tumbler block vertically oscillatory and centrally pivoted, said tumbler block controlled by a spring, said tumbler block adapted to be changed to a horizontal position by the downward movement of the latch shank upon its raised end, the opposite end of said tumbler provided with a right angularly projecting tapered portion normally engaging in an opening in a removable casing plate, and said central portion,  
105 projecting annular rims and tumbler block adapted to revolve a prescribed distance, when said tumbler block assumes a horizontal position with the tapered end upon the inner surface of the removable casing  
110 plate, and the limit of such movement controlled by the faces terminating the smaller curvilinear recess, substantially as set forth.

5. An improved lock latch consisting of a shank having a projecting portion at one end, said projecting portion provided in its outer side with rectangular openings, which leaves rectangular lugs, said lugs and openings adapted to correspond to the annular rims and grooves upon the locking mechanism, an elongated portion upon the opposite end of said latch-shank, a rectangular slot in said elongated end, and said slot adapted to fit over a pin held by projecting lugs upon a plate, substantially as set forth.  
115 120 125 130

6. An improved lock having a locking mechanism located within a casing, an annularly projecting plate mounted upon said casing, said plate provided with a transverse slot

running from one side of its periphery to its center, a key guide in the center of said plate, an upwardly projecting key pin, located in one corner of a curvilinear recess in  
5 the top plate of the locking mechanism, a key adapted to fit upon said key pin, and the engagement of the projection upon the key against the side of said recess, adapted when turned to turn the locking parts and release  
10 the latch shank, substantially as set forth.

7. An improved electric alarm lock having a locking mechanism located within a casing, said casing provided at one end with an annularly projecting plate, its opposite end  
15 closed by a removable metallic plate 12, a plate of insulating material adapted to be secured to said removable metallic plate, said locking mechanism adapted to be connected

in an electric circuit by a wire connected to the screw used to secure said insulation plate 20 to said metallic plate, said metallic and insulation plates provided with coinciding openings, an electrical conductor projecting into said opening, and the tapered projecting end of the spring controlled vertically oscillating 25 tumbler block adapted to engage said electrical conductor secured to said insulation plate when the device is unlocked, thus completing the circuit, substantially as set forth.

In testimony whereof I affix my signature in 30 presence of two witnesses.

FRANK SIMONS.

Witnesses:

HERBERT S. ROBINSON,  
ED. E. LONGAN.