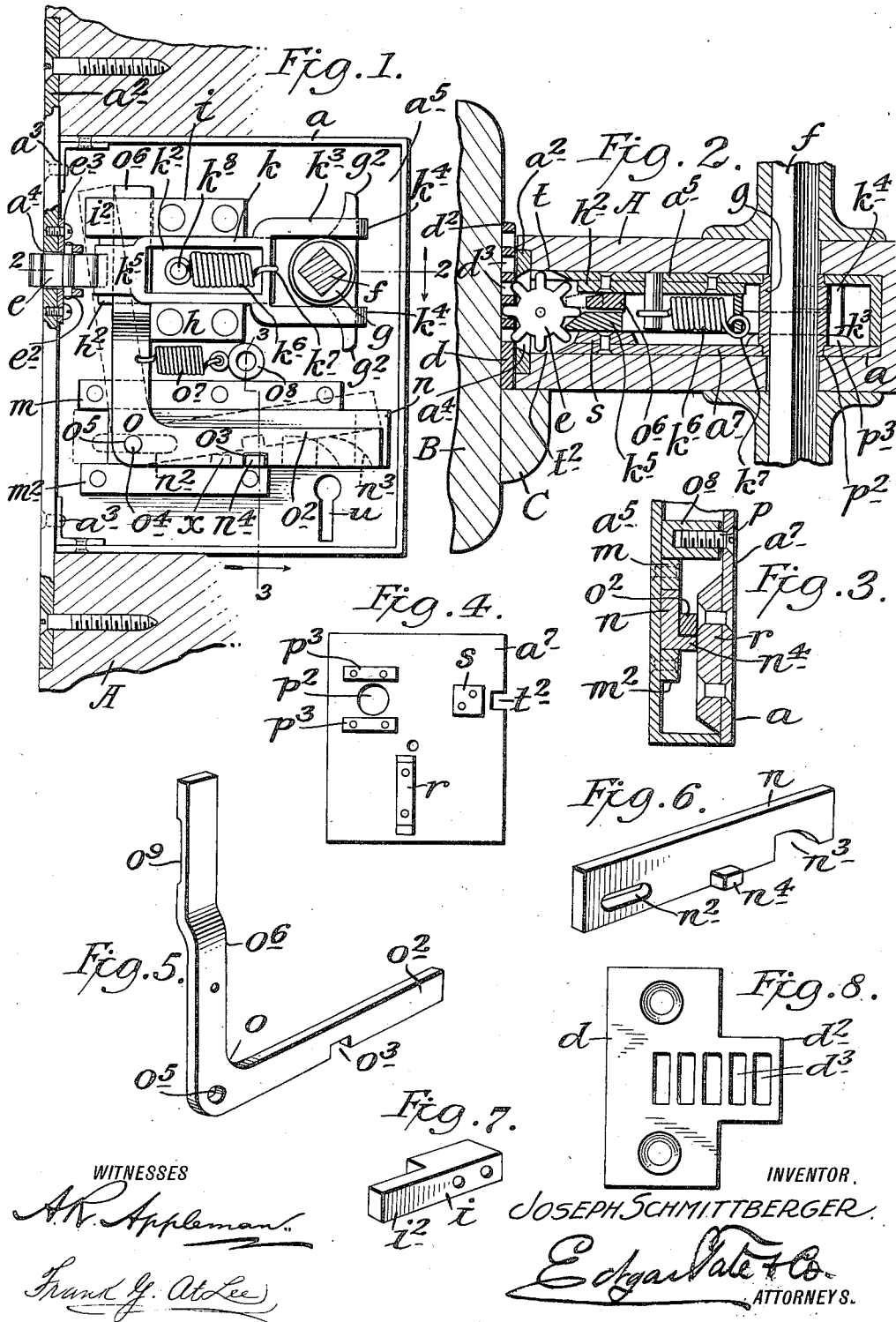


DOOR LOCK.

1,036,346.

Patented Aug. 20, 1912.



UNITED STATES PATENT OFFICE.

JOSEPH SCHMITTBERGER, OF WEST HOBOKEN, NEW JERSEY.

DOOR-LOCK.

1,036,346.

Specification of Letters Patent.

Patented Aug. 20, 1912.

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To all whom it may concern:

Be it known that I, JOSEPH SCHMITTBERGER, a citizen of the United States, and residing at West Hoboken, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Door-Locks, of which the following is a specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to door locks, and the object thereof is to provide an improved device of this class in which the ordinary latch bolt operated by the door knob and the ordinary lock bolt operated by a key are omitted, and in which is employed a spur wheel which operates in connection with a slotted strike plate secured to the door frame and which operates both for the purpose of latching the door and locking it, together with knob and spring-operated devices for securing said spur wheel against rotation when the door is latched, simply; and a key-operated bell crank lever for securing said wheel against rotation when the door is locked.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms part, in which the separate parts of my improvement are designated by suitable reference characters in each of the views, and in which:—

Figure 1. is a side view showing my improved lock secured in a door, one side of the lock casing being removed and part of the construction shown in section; Fig. 2, a section on the line 2—2 of Fig. 1; Fig. 3 a partial section on the line 3—3 of Fig. 1; Fig. 4 an inside view on a reduced scale of the side of the lock casing which is removed in Fig. 1, and which is shown in section in Fig. 2; Fig. 5 a perspective view of a bell crank locking lever which I employ; Fig. 6 a perspective view of a sliding lock bar which I employ; Fig. 7 a perspective view of a detail of the construction shown in Fig. 1, and Fig. 8 a face view of a strike plate which I employ.

In the drawing forming part of this specification I have shown at A a part of a door and at B a part of a door frame provided with the usual molding strip C against which the door strikes when closed, and secured to the door frame B is a strike plate *d* which is shown detached in Fig. 8 and which

is preferably provided at one side edge with an extension *d*² in which are formed parallel slots *d*³ which range longitudinally of the plate *d* and extend into the middle portion thereof as clearly shown.

In the practice of my invention I provide a lock casing *a* having a face plate *a*², and said lock casing and face plate are countersunk or mortised into the door in the usual manner, the casing *a* being secured to the face plate *a*² at *a*³, and the face plate *a*² being also provided with a transverse aperture *a*⁴ through which pass the teeth of a spur wheel *e* rotatably connected at *e*² on a plate *e*³ or other support secured to the inner side of the face plate *a*². I have also shown at *f* the ordinary knob shaft with which, in practice, the inner and outer door knobs are connected in the usual manner, said knobs being not shown, and this shaft is angular in cross section and mounted thereon within the lock casing *a* is a sleeve *g* having laterally directed fingers *g*², said shaft and sleeve being of the usual form.

Between the knob shaft *f* and the face plate *a*² are mounted two parallel guide blocks *h* and *i* and the upper guide block *i* is shown detached in Fig. 7 and is provided with a projection *i*² and said guide blocks are riveted to the side *a*⁵ of the lock casing, and between said guide block is a bed plate *h*³ which is also riveted to the side *a*⁵ of the lock casing, and movable between the blocks *h* and *i*, and resting on the bed plate *h*³, is a bolt *k* provided with a central longitudinal slot or opening *k*² and the inner end of which is formed into a yoke-shaped head *k*³ having outwardly directed hook members *k*⁴ in connection with which the fingers *g*² of the sleeve *g* operate to draw the bolt *k* inwardly, and the bolt *k* is provided at its outer or front end with a projecting nose piece *k*⁵ which is beveled on one side and which operates in connection with the spur wheel *e* or the teeth thereof. Within the central longitudinal slot *k*² of the bolt *k* is placed a spiral spring *k*⁶ one end of which is secured to the bolt *k*⁷ and the other end to a pin *k*⁸, secured in the bed plate *h*³ and the side *a*⁵ of the lock casing. Below the guide block *h* are parallel guide bars *m* and *m*² which are also secured to the side *a*⁵ of the lock casing and between which is mounted a longitudinally movable lock bar *n* provided in its front end portion with

a longitudinal slot n^2 , and in its bottom rear edge portion with a recess n^3 , and centrally of its inner side with a projecting lug n^4 , and mounted on the casing is a bell crank lever o the arm o^2 of which overlaps the bar n and is provided with a recess o^3 which corresponds with and is adapted to receive the lug n^4 , and secured to the plate a^5 of the lock casing is a pin o^4 which passes through the slot n^2 in the bar n and through a hole o^5 in the angle of the bell crank lever o .

The arm o^6 of the bell crank lever ranges vertically when in its normal position and parallel with the face plate a^2 of the lock casing, and said arm passes back of the nose piece k^5 of the bolt k , and back of the extension i^2 of the guide block i , and secured to the arm o^6 is a spiral spring o^7 which is also secured to a stud o^8 secured to the side plate a^5 of the lock casing. The side a^7 of the lock casing is detachably secured in position by a screw p passed therethrough and into the stud o^8 , and said side a^7 is provided with a hole p^2 through which the knob shaft f passes and in which one end of the sleeve g has a bearing, the other end of said sleeve having a bearing in the side plate a^5 of the lock casing, and at the opposite sides of the hole p^2 are secured parallel blocks p^3 on which the side members of the yoke-shaped head k^2 of the bolt k bear. The side a^7 is also provided at right angles to the blocks p^3 with a block r which is shown in longitudinal section in Fig. 3 and which forms a guide or bearing for the arm o^2 of the bell crank lever o , and which also serves to hold the bar n in position between the guide bars m and m^2 , and said side a^7 is also provided with a guide block s which bears on the nose piece k^5 of the bolt k .

The operation will be readily understood from the foregoing description, when taken in connection with the accompanying drawing and the following statement thereof. It will be seen that the side plates a^5 and a^7 of the lock casing are cut out at t to provide room for the spur wheel e as is also the face plate a^2 of the lock casing, and suppose the door to be closed as shown in Fig. 2, all that is necessary is to turn the shaft f and pull or shove the door outwardly. This operation withdraws the bolt k and its nose piece from the teeth of the wheel e and allows said wheel to turn, and after this operation is performed and the knob released, the spring k^5 forces the bolt k back into the position shown in Fig. 2 and the door may be closed by simply swinging it into the closed position, in which operation the teeth of the wheel e catch in the slots d^3 of the strike plate and rotate said wheel, and at the same time other teeth of said wheel strike the beveled side of the nose piece k^5 of the bolt k and successively forces said bolt backwardly or inwardly, or the

operation of closing the door may be performed by means of one of the knobs on the shaft f , as will be readily understood. When it is desired to lock the door, a key is inserted at u and turned so as to raise the arm o^2 of the bell crank lever o and at the same time the bit of the key will enter the recess n^3 in the bar n and force said bar outwardly into the dotted position shown in Fig. 1. In this operation the arm o^2 of said lever is released from the lug n^4 of the bar n and said lug is forced under said arm as shown at x in Fig. 1 and holds the said arm in the raised position shown in dotted lines in said figure, and this operation forces the arm o^6 of said bell crank lever outwardly as shown in dotted lines in Fig. 1 and causes it to engage the teeth of the wheel e and prevent its rotation, and this locks the door as will be readily understood. In order to unlock the door, the key is turned in the reverse direction. This operation forces the bar n inwardly and withdraws the lug n^4 from the position shown at x in Fig. 1 back into the position shown in full lines in said figure, at which time the spring o^7 forces the bell crank lever o into the position shown in full lines in said figure and the door is unlocked. The free end portion of the arm o^6 of the bell crank lever o is offset from the plane of the arm o^2 as clearly shown in Fig. 5, and is provided in the back thereof with a beveled recess o^9 so that it will enter the space between the teeth of the wheel e .

From the foregoing description it will be seen that the wheel e operates both as a means for latching and as a means for locking the door, and while I have shown the strike plate d as secured to the frame b it will be understood that said strike plate may be countersunk in said frame if desired, and other changes in and modifications of my improved lock mechanism may be made, within the scope of the appended claims, without departing from the spirit of my invention or sacrificing its advantages.

Although I have described my improvement as a door lock, it will be apparent that the same may be used in connection with other stationary and swinging members or devices.

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

1. In a lock of the class described, a slotted strike plate adapted to be secured to a stationary member and a lock casing adapted to be secured in a swinging member and having a knob-operated shaft which passes therethrough and through said swinging member, said lock casing being provided with a rotatable spur wheel the teeth of which are adapted to engage said strike plate, and a spring-operated bolt having a

beveled nose adapted to engage said spur wheel, said bolt being adapted to be moved out of engagement with the spur wheel by turning the knob shaft, and said casing being also provided with a locking crank lever adapted to be operated in one direction by a key so as to lock said spur wheel against rotation, and a spring for throwing said crank lever out of engagement with said wheel.

2. In a lock of the class described, a casing provided with a face plate having a transverse slot formed therein, a spur wheel mounted on the inner side of said face plate and the teeth of which pass through said slot, a sliding spring-operated latch bolt adapted to engage said spur wheel, and a knob shaft for moving said latch bolt out of engagement with said wheel, said casing being also provided with a locking crank lever operated in one direction by a key and adapted to engage said wheel, and in the opposite direction by a spring.

3. In a lock of the class described, a casing having a face plate provided with a transverse slot, a spur wheel mounted inwardly of said face plate and the teeth of which project through said slot, a slidably mounted latch bolt adapted to engage said spur wheel, a spring for throwing said bolt into operative engagement with said wheel, a knob shaft for throwing said bolt out of engagement with said wheel, a sliding bar mounted below and parallel with the latch bolt and adapted to be operated by a key, a locking crank lever mounted on said bar and one arm of which is adapted to engage said wheel and to be operated by a key when the sliding bar is operated, and a spring for

moving the locking crank lever out of engagement with said wheel when the bar is moved in the opposite direction by the key.

4. In a lock, a casing having a face plate provided with a transverse slot, a spur wheel mounted inwardly of the face plate and the teeth of which extend through said slot, a horizontally movable latch bolt mounted in said casing and tensionally held in engagement with said wheel, a knob shaft passing through said casing and means whereby the turning of said shaft will throw said bolt out of connection with said wheel, and a key operated lever also adapted to engage said wheel.

5. In a lock of the class described, a strike plate adapted to be secured to a swinging member and having a horizontal row of vertically arranged slots, a casing adapted to be secured to a swinging member and having a face plate provided with a transverse slot, a spur-wheel mounted inwardly of the face plate and the teeth of which extend through the slot therein, a horizontally movable latch bolt mounted in said casing and tensionally held in engagement with said wheel, a knob-shaft passing through said casing, means whereby the turning of said shaft will throw said bolt out of connection with said wheel and a key operated lever also adapted to engage said wheel.

In testimony that I claim the foregoing as my invention I have signed my name in presence of the subscribing witnesses this 18th day of September 1911.

JOSEPH SCHMITTBERGER.

Witnesses:

C. E. MULREANY,
FRANK G. AT LEE.