

March 15, 1949.

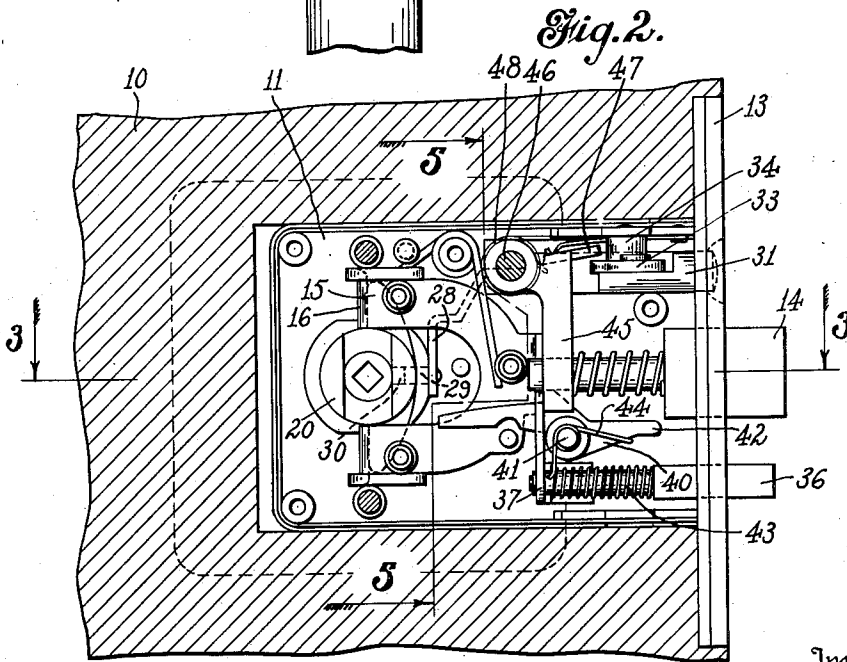
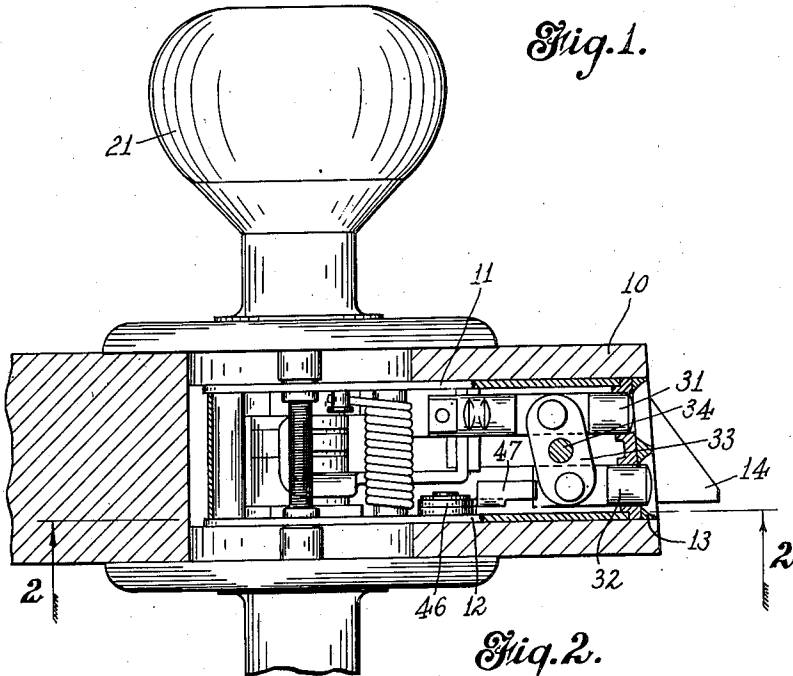
S. OXHANDLER

2,464,603

DOOR LOCK

Filed Sept. 26, 1946

2 Sheets-Sheet 1



Inventor

Samuel Oxhandler

By *Goehnel & Parholow*
Attorneys

March 15, 1949.

S. OXHANDLER

2,464,603

DOOR LOCK

Filed Sept. 26, 1946

2 Sheets-Sheet 2

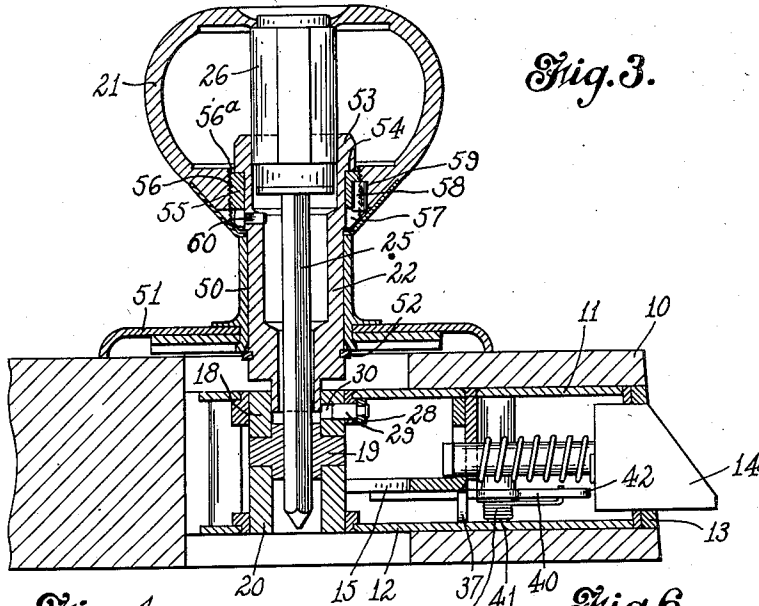


Fig. 3.

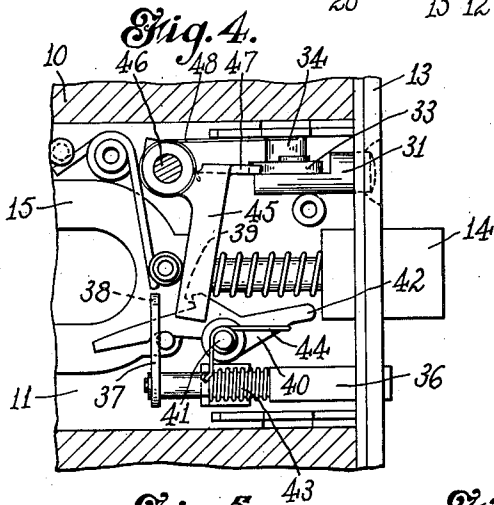


Fig. 4.

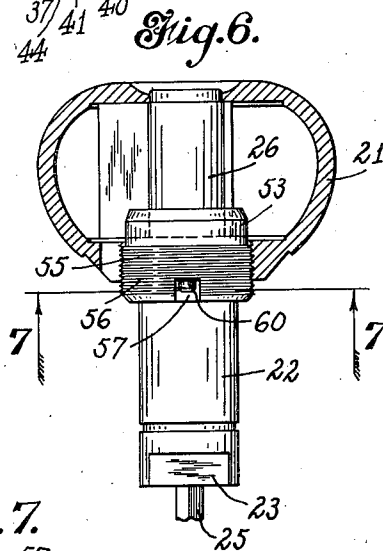


Fig. 5.

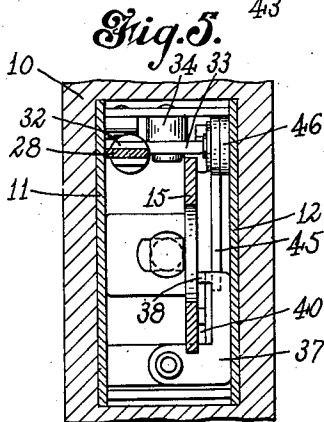


Fig. 6.

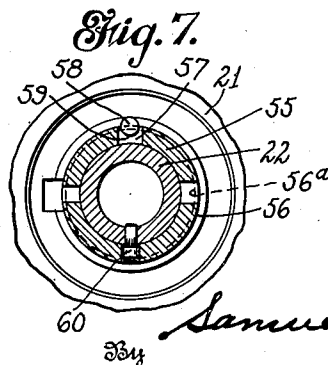


Fig. 7.

Inventor

Samuel Oxhandler
Rockwell Sachse
Attorneys

UNITED STATES PATENT OFFICE

2,464,603

DOOR LOCK

Samuel Oxhandler, Flushing, N. Y., assignor to
Sargent & Company, New Haven, Conn., a cor-
poration of Connecticut

Application September 26, 1946, Serial No. 699,480

2 Claims. (Cl. 70—150)

1

This invention relates to door locks, and more particularly to safety devices for door locks, so that the lock may not be forced and the door opened by an unauthorized person.

In door locks which are provided with a latch bolt rather than a dead bolt, it has been more or less customary to provide a so-called guard bolt which is forced inwardly or retracted by contact with the strike plate of the door and usually releases a lever or other dogging member which is moved into engagement with the latch bolt and prevents the retraction of the latter. This prevents an unauthorized person from inserting a tool between the door and door jamb and forcing back the latch bolt by pressure on the beveled edge thereof, it being understood that in such locks some means is usually provided to dog the bolt against retraction by the outside knob.

With such an arrangement, when the latch bolt is dogged against retraction by the outside knob and when the bolt is also dogged by the action of the guard bolt (explained immediately above) against retraction by the insertion of a tool between the door and jamb, the door may not usually be forced by an unauthorized person so long as the outside knob cannot be removed. There are, however, two ways in which such a lock may be forced, and it is the object of the present invention to prevent the forcing of the lock in either of these two ways, as will now be explained.

The latch is usually dogged against retraction from the outside by a knob-dogging device which often comprises a lever or push buttons accessible at the face plate of the lock when the door is open. When the door is closed, this face plate stands against the strike plate, and it has often been assumed that in such case the dogging mechanism cannot be actuated when the door is closed. However, it sometimes occurs that an unauthorized person may insert a tool between the door and door jamb and operate the dogging plungers or dogging lever in a manner similar to that employed to force back the latch bolt. When this dogging mechanism is actuated, the outside knob is no longer dogged and anyone may freely enter. I contemplate by the present invention, therefore, to provide such a construction that, when the door is closed with the dogging mechanism set to dog the outside knob, this dogging mechanism is itself held or dogged against movement so that it cannot be moved to inoperative position to release the outside knob by a tool inserted between the door and door jamb.

It also sometimes occurs that the outside knob is broken or removed from its shank, thus per-

2

mitting an unauthorized person to insert a tool through the hollow shank or sleeve and manipulate the latch bolt from the outside just as he would from the inside. That is, although the outer knob is dogged the inner knob is not dogged, and if the outer knob is removed it is a relatively simple matter to operate or retract the latch bolt from the outside. Alternatively, when the outer knob is provided with a key-operated lock, which also may operate the latch bolt, the knob may sometimes be fractured or broken to permit it to rotate upon its shank, and as this is equivalent to the rotation of the key barrel the latch may, in that event, be operated by the rotation of the knob even though the shank of the knob is still dogged. Therefore, I also contemplate by the present invention to construct the knob in such a manner that if a wrench or other tool is applied thereto a frangible pin or securing member will be broken and will permit the knob to rotate freely upon the shank, but such action will not result in the rotation of the key-operated lock or spindle operated thereby, and as the knob will rotate freely upon its shank no further damage can be done thereto by the tool.

One object of the present invention, therefore, is to provide a door lock with a latch bolt and a guard bolt and knob-dogging mechanism, the construction being such that the retraction of the guard bolt will also prevent actuation of the knob-dogging mechanism when the latter is in operative position.

A still further object of the invention is to provide a door lock with mechanism accessible through the face plate of the lock for dogging the outer knob, and with guard bolt mechanism arranged when the guard bolt is retracted by the strike plate to both prevent retraction of the latch bolt and prevent actuation of the dogging mechanism if the latter is in operative position.

Still another object of the invention is to provide a knob structure for a door lock such that the knob may not be removed by the application of a wrench or other rotative force at the outside of the door.

Still another object of the invention is to provide a lock having mechanism to dog the outer knob with an outer knob construction such that the application of a turning force to the outer knob by a wrench or other tool will merely result in the fracture of a frangible element which will permit the knob to turn idly upon its shank while it is still held upon the shank.

To these and other ends the invention consists

3

in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a sectional view through a door having my lock applied thereto, the lock mechanism being shown in top plan view;

Fig. 2 is a vertical sectional view on line 2—2 of Fig. 1;

Fig. 3 is a sectional view on line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view similar to Fig. 2, but showing the parts in another position;

Fig. 5 is a sectional view on line 5—5 of Fig. 2;

Fig. 6 is a plan view of the door knob and shank detached from the lock; and

Fig. 7 is a sectional view on line 7—7 of Fig. 6.

To illustrate a preferred embodiment of my invention, I have shown in the drawings a door 10 having a lock applied thereto consisting of a case portion 11, a cover 12, and a face plate 13.

A latch bolt 14 is slidably mounted in the case, this latch being provided with a retracting yoke 15 having laterally turned end portions 16 adapted to be engaged by any one of the three hubs or rollbacks 18, 19 and 20. The rollback 26 is operated by an inside knob (not shown) in the usual manner, and no further description thereof is necessary.

The rollback 18 is operated by the outside knob 21, which knob is mounted upon the shank 22 in a manner which will be hereinafter described, which shank is provided with a reduced non-circular end portion 23 adapted to fit within the hub of the rollback. The rollback 19 is operated by the square spindle 25 attached to the key barrel of a cylinder lock 26 mounted in the outside knob.

As shown more particularly in Fig. 2, the outside rollback 18 is adapted to be dogged against operation by a dogging slide 28, to which slide is connected a pin 29 adapted to be received in a recess 30 in the hub of the rollback. The slide 28 is connected to a plunger 31 (Fig. 1) accessible for operation through an opening in the face plate 13, this plunger being connected to a companion plunger 32 also accessible through the face plate 13 by a walking beam 33 pivoted in the case at 34. The arrangement is such that when one of the plungers is moved inwardly, the other is moved outwardly, so that the dogging slide may be operated in either direction, depending upon which of the plungers is actuated by pressure of the finger thereon. Inward pressure upon the plunger 31 to move it to the left, as shown in Figs. 1 and 2, will move the dogging slide inwardly and project the pin 29 in the recess 30 to dog the outside knob against operation.

Also slidably mounted in the lock case is a guard bolt 36, which guard bolt carries a tail or crosshead 37 having a laterally disposed finger 38 adapted to engage a shoulder 39 upon a dogging lever 40 pivotally mounted in the case at 41, this dogging lever having a nose 42 adapted to engage rearwardly of the latch bolt and prevent the retraction of the latter. As shown in Fig. 4, the guard bolt is urged to projected position by a spring 43, while the dogging lever 40 is urged in a counterclockwise direction by a spring 44.

The above parts are of usual construction and, according to the usual practice, when the door stands open the guard bolt will be projected, as shown in Fig. 2, and the finger 38 on the tail of the guard bolt will engage the shoulder 39 of the dogging lever 40 and hold it in its inoperative position against the pressure of spring 44. How-

4

ever, when the door is closed, the guard bolt will be retracted by the strike plate on the door jamb and the finger 38 will be moved away from the shoulder 39, thus permitting the spring 44 to throw the dogging lever 40 to the position shown in Fig. 4 in which its nose 42 stands behind the latch bolt and prevents retraction of the latter.

A lever 45 is pivoted to the cover 12 of the case at 46, this lever, as shown in Fig. 2, normally being held in a forward position by the engagement therewith of the tail 37 of the guard bolt when the door is open and the guard bolt protruded. This lever is provided adjacent its upper end with a laterally projecting arm 47 which, in this position of the parts, normally stands above the walking beam 33 so as not to interfere with the action of this walking beam or the plungers 31 and 32. A spring 48 urges the lever 45 in a clockwise direction.

When the door is closed and the guard bolt moved to the position shown in Fig. 4, the tail portion 37 of the guard bolt will be moved rearwardly out of engagement with the lever 45, thus permitting the spring 48 to move this lever slightly in a clockwise direction, thus throwing the arm 47 downwardly to a position to engage the walking beam 33 and, by preventing its movement, also preventing movement of the plunger 32.

Therefore, it will be seen that when the door is closed and the guard bolt retracted by the strike plate, not only will the bolt 14 be dogged against retraction by the lever 40, but also, if the outside knob is dogged against operation by inward movement of the plunger 31, the walking beam 33 will be restrained from movement, so that the plunger 31 may not be moved outwardly to release the outside knob. Therefore, an unauthorized person cannot, by the insertion of a tool between the door and jamb, force the plunger 32 inwardly and the plunger 31 outwardly and thus release the outside knob.

As stated above, I have also provided mechanism for preventing removal of the outside knob from the door, which will now be explained. The knob shank 22 is rotatably mounted in a sleeve 50 secured to the escutcheon 51, and a split ring 52 is engaged in an annular recess in the shank to prevent removal of the shank from the sleeve.

This shank is hollow and is provided adjacent its outer end with an enlarged portion 53, there being a shoulder 54 between this enlarged end and the body of the shank. A sleeve 55 is freely mounted upon the shank, this sleeve having external threads 56 to receive the threads 56^a provided internally upon the knob 21, so that the knob may be threaded upon the sleeve 55.

This sleeve is provided with a plurality of recesses 57 (Figs. 6 and 7) adjacent its inner edge, and after the knob has been threaded upon the sleeve a pin 58 is driven through one of the recesses 57 into registering semi-circular recesses 59 in the sleeve and the knob, thus preventing relative rotation of the knob and sleeve so that the knob may not be unscrewed.

As the sleeve 55 is rotatably mounted on the shank, the knob which is secured to the sleeve, as described above, would also be rotatable upon the shank. In order to secure the knob rigidly to the shank 22 a pin 60 (Figs. 3 and 7) is driven into the shank through one of the recesses 57, the head of the pin standing in this recess so that the sleeve 55 may not be rotated on the shank. The knob is now rigidly secured to the shank as the sleeve 55 can neither rotate thereon or move

5

longitudinally thereof, it being restrained against longitudinal movement by the shoulder 54 and pin 60.

The pin 60 is so constructed that it is more easily fractured than the pin 58, so that if an unauthorized person applies a strong rotative force to the door knob when the latter is dogged as by a wrench or similar tool, the pin 60 will be fractured before the pin 58 or other parts give way. Fracture of the pin 60 will permit the sleeve 55 and knob secured thereto to rotate freely upon the hollow shank 22, but the knob and sleeve will, of course, be prevented from removal from the shank by the shoulder 54. No further rotative force can now be effectively applied to the knob, and it will be impossible for an unauthorized person to gain entrance to the door by this method.

When the pin 60 has been fractured, it is only necessary to remove the knob assembly from the door, and after removal of the split ring 52 from the shank 22 the latter may be drawn out of the sleeve 55 and the broken pin 60 replaced with a new one. The only damage which will have been done to the lock by the attempt at burglarly will be the fracture of the pin 60 which may be readily replaced as described.

As indicated in Fig. 6 of the drawings, the lock mounted within the knob 21 is telescoped within the end of the shank 22 and held against rotation with respect to this shank. Therefore, rotation of the knob upon the shank after the pin 60 has been fractured does not result in rotation of the spindle 25.

While I have shown and described some preferred embodiments of my invention, it will be understood that it is not to be limited to all of the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the claims.

What I claim is:

1. A door lock comprising a case having a face plate, a bolt reciprocably mounted in the case,

6

actuating means for the bolt including a knob, knob-dogging mechanism having actuating means, a part of which projects through the face plate, a retractable guard bolt projecting through the face plate, a lever pivoted in the case and controlled by said guard bolt for dogging said first-named bolt, and a member movably mounted in the case and controlled in position by said guard bolt, said member being adapted to dog said actuating means when said guard bolt is retracted, said member comprising a second lever pivoted in the case and having a portion engaged by a part of the guard bolt and another portion adapted to engage the actuating means.

2. A door lock comprising a case having a face plate, a bolt reciprocably mounted in the case, actuating means for the bolt including a knob, knob-dogging mechanism having actuating means, a part of which projects through the face plate, a retractable guard bolt projecting through the face plate, a lever pivoted in the case and controlled by said guard bolt for dogging said first-named bolt, a member movably mounted in the case and controlled in position by said guard bolt, said member being adapted to dog said actuating means when said guard bolt is retracted, said member comprising a second lever pivoted in the case, and each of said levers having a portion engaged by a part of the guard bolt when the latter is protracted to hold them in inoperative position.

SAMUEL OXHANDLER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
938,444	Voight	Oct. 26, 1909
1,171,264	Shaw	Feb. 8, 1916
1,744,957	Fox	Jan. 28, 1930