



June 28, 1960

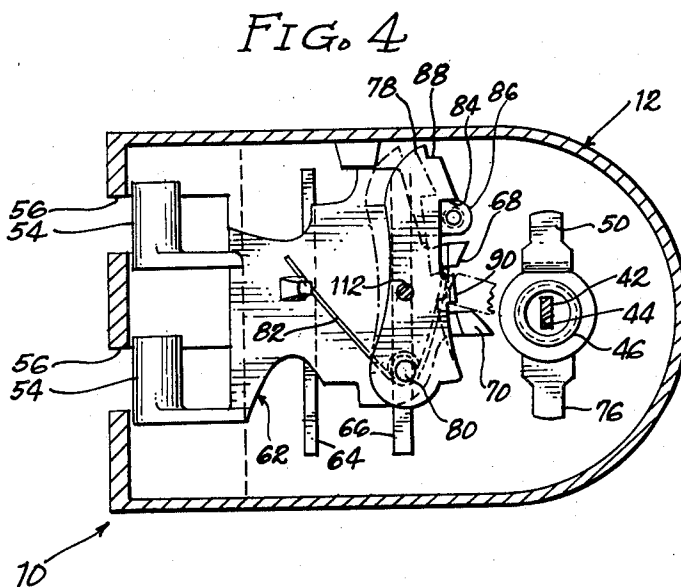
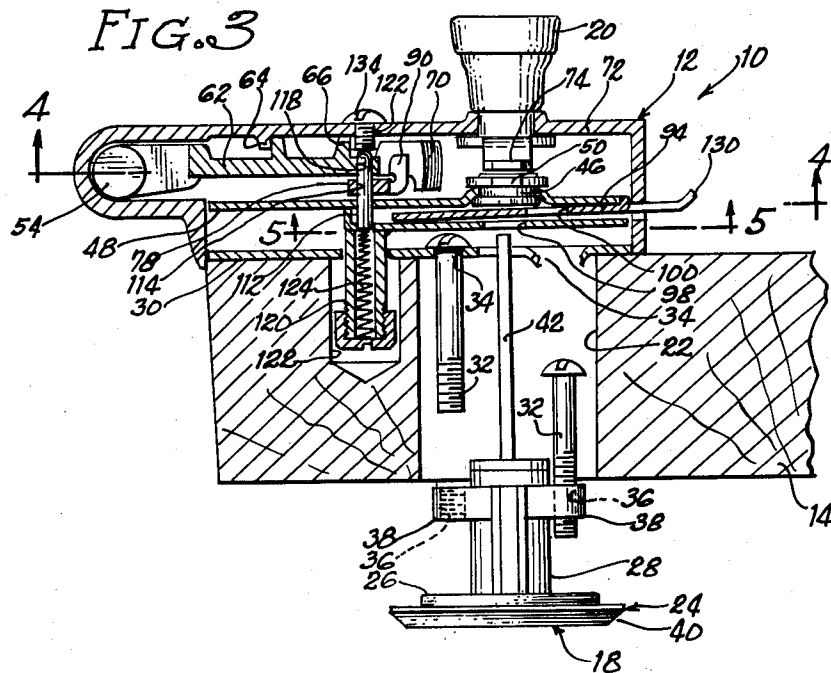
C. WHITE

2,942,449

BURGLAR-RESISTANT LOCK

Filed Sept. 11, 1958

3 Sheets-Sheet 2



INVENTOR.

Clemens White

BY

Ooms, McDougall, Williams & Hersh  
Attorneys

June 28, 1960

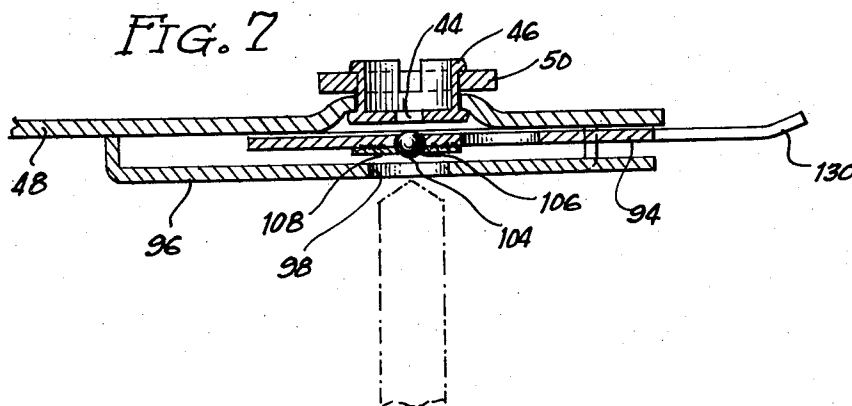
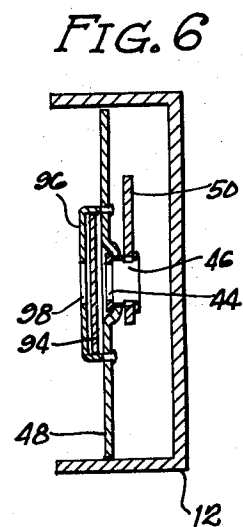
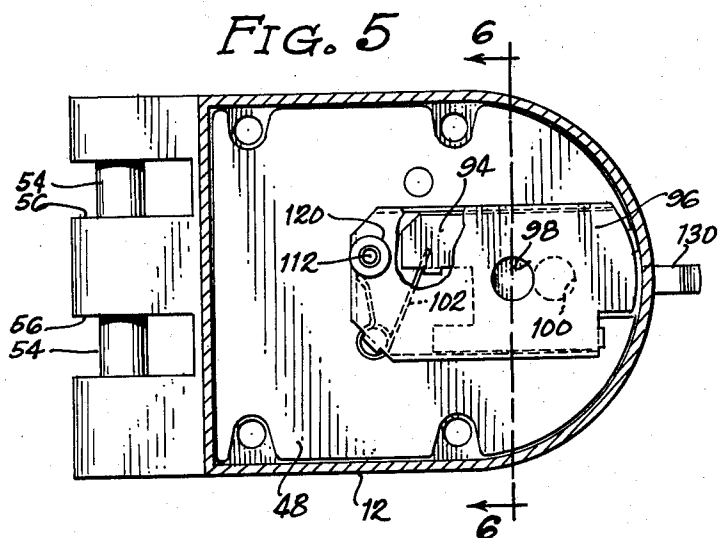
C. WHITE

2,942,449

BURGLAR-RESISTANT LOCK

Filed Sept. 11, 1958

3 Sheets-Sheet 3



INVENTOR.

Clemens White

BY

Osborne, McDougal, Williams & Hersh  
Attorneys

1

2,942,449

## BURGLAR-RESISTANT LOCK

Clemens White, 400 Deming Place, Chicago, Ill.

Filed Sept. 11, 1958, Ser. No. 760,377

7 Claims. (Cl. 70—1.5)

This invention relates to locks, particularly door locks of the type adapted to be operated by a tumbler type cylinder.

One object of the present invention is to provide a new and improved lock of the cylinder type which will offer considerable resistance to being opened, even after a burglar has pulled out the cylinder of the lock.

A further object is to provide a new and improved lock of the foregoing character, having means for positively preventing operation of the lock in the event that the cylinder is pulled.

Another object is to provide a new and improved lock of the foregoing character having means to resist the drilling of a hole by a burglar, to afford access to the interior of the lock after he has pulled the cylinder.

It is a further object to provide a new and improved lock in which the opening for the cylinder shaft is automatically closed by a spring-operated cover plate when the lock cylinder is pulled, and in which the operation of the cover plate automatically causes operation of a device for positively preventing operation of the lock.

Another object is to provide a new and improved lock of the foregoing character, in which the cover plate is provided with means to resist the drilling of a hole therein.

Still another object is to provide a new and improved lock which affords a high degree of resistance to burglary, yet is easy to manufacture and low in cost.

Further objects and advantages of the present invention will appear from the following description taken with the accompanying drawings, in which:

Fig. 1 is a fragmentary elevational view showing the outer side of a door equipped with a burglar-resistant lock, to be described as an illustrative embodiment of the present invention.

Fig. 2 is a horizontal section, taken generally along a line 2—2 in Fig. 1.

Fig. 3 is a horizontal section, similar to Fig. 2, but showing the action of the lock when the cylinder is pulled out by a burglar.

Fig. 4 is a somewhat diagrammatic vertical section taken generally along a line 4—4 in Fig. 3.

Fig. 5 is another vertical section, taken generally along a line 5—5 in Fig. 3.

Fig. 6 is a vertical cross section taken generally along a line 6—6 in Fig. 5.

Fig. 7 is a fragmentary enlarged horizontal section, similar to a portion of Fig. 3 but showing a modification.

The present invention is applicable to locks in general, but is shown in the drawings as applied to a door lock 10, of the type having a housing 12, adapted to be mounted on the inner side of a door 14. The lock 10 is adapted to be operated from the outside by means of a key 16, which may be inserted into a lock cylinder 18 of the tumbler type. It will be seen that the lock 10 has a knob 20 thereon for operating the lock from the inside.

A hole 22 is formed in the door 14 to receive the cylinder 18. It will be apparent that the cylinder is provided with an enlarged flange member, adapted to engage the outer face of the door around the hole 22. A reduced por-

2

tion 26 of the cylinder 18 is seated in the outer portion of the hole 22. The cylinder 18 has a rear portion 28, of a still smaller cross section than the portion 26.

Various arrangements may be employed for securing the cylinder 18 in the hole 22. In this case, a plate 30, made of metal or the like, is mounted against the inner face of the door 14 and is arranged to extend across the inner end of the hole 22. Two screws 32 extend through holes 34 in the plate 30 and are screwed into tapped openings 36, formed in lugs 38 on the cylinder 18.

Superficially, it would appear that the cylinder 18 can be removed only by removing the screws 32 from the inside of the door. However, experience has demonstrated that a burglar can readily take hold of the cylinder flange 24 with a large pair of pliers, a toggle wrench, or the like, and can then exert sufficient force on the cylinder to pull it out of the door. In order to make the cylinder flange 24 difficult to grasp, it is formed with a forwardly tapering outer surface 40. Even so, a burglar can pull the cylinder quite readily. The force exerted by the burglar loosens the cylinder 24 by pulling the heads of the screws 32 through the holes 34, as illustrated by the right hand screw 32 shown in Fig. 3; by stripping the threads on the screws 32 or in the holes 36, as illustrated by the left hand screw 32, in Fig. 3; or by breaking off one or both of the lugs 38. The burglar's purpose in pulling the cylinder 18 is to enable him to insert an instrument into the lock housing 12 to open the lock.

Normally, the lock 10 is adapted to be operated by a shaft 42 extending rearwardly from the cylinder 18 into the housing 12. The shaft 42 is usually made in the form of a flat bar adapted to be rotated by the key 16. The rotation of the shaft 42 opens the lock 10.

It should not be thought that the present invention is limited to any particular type of lock cylinder or lock mechanism. Thus, the lock mechanism, about to be described, is shown merely by way of example. As illustrated in Figs. 2 and 4, the flat shaft 42 extends through a rectangular slot 44, which is formed in a rotatable bushing or hub 46. From Fig. 2, it will be apparent that the hub 46 is rotatably supported by a plate 48, which closes the side of the housing 12 facing toward the door 14. A radially projecting arm or finger 50 is mounted on the hub 46 for operating the lock mechanism.

The illustrated lock 10 is of the type having a pair of jimmy-resistant bolts 54, which are movable vertically across slots 56 formed in the outer edge of the housing 12. As indicated in Fig. 1, the bolts 54 are adapted to interlock with apertured lugs 58, formed on a member 60. Of course, the member 60 is adapted to be mounted on the inside of the door jamb. The lugs 58 are adapted to be received in the slots 56 formed in the casing 12.

In this case, the bolts 54 are formed integrally with a single slide member 62, which is movable vertically along guides 64 and 66 in the housing 12. Upper and lower lugs or teeth 68 and 70 are provided on the slide member 62 for operation by the arm 50 on the hub 46. In Fig. 4, the member 62 is shown with the bolts 54 in their locked positions. The bolts 54 may be unlocked by rotating the hub 46 counterclockwise, as seen in Fig. 4. This moves the arm 50 downwardly against the tooth 70. The continued rotation on the arm 50 pushes the tooth 70 downwardly and thereby shifts the slide member 62 to its lower position with the bolts 54 unlocked.

The bolts 54 may be raised to their locked positions by rotating the hub 46 clockwise. The arm 50 will then miss the lower tooth 70 but will strike the upper tooth 68, so as to move the slide member 62 upwardly.

Of course, the knob 20 is also adapted to operate the bolts 54. In this case, the knob 20 is rotatably mounted in the outer wall 72 of the housing 12 and is provided with oppositely directed arms 74 and 76, similar to the

arm 50. In Fig. 4, the arm 50, obscures the upper arm 74, which is adapted to cooperate with the teeth 68 and 70 in the same manner as the arm 50.

The illustrated lock is arranged so that the bolt slide 62 will be latched in its locked and unlocked positions. For this purpose, a latch or pawl 78 is provided. The illustrated latch 78 is swingingly mounted on a pivot 80, extending outwardly from the bolt slide 62. A spring 82 is connected between the slide 62 and the latch 78, so as to bias the latch in a clockwise direction.

It will be apparent that the latch 78 is formed with a hook or lower shoulder 84 adapted to engage the upper side of a post 86 which is mounted on the housing 12. The spring 82 urges the latch 78 against the post 86 so as to maintain the engagement between the shoulder 84 and the post. This latches the bolt slide 62 in its upwardly displaced, locked position. The latch 78 has an upper shoulder 88 adapted to engage the lower side of the post 86 when the bolt slide 62 is in its downwardly displaced, unlocked position. In this way, the bolt slide is latched in its unlocked position.

The latch 78 is arranged to be swung away from the post 86 by the arm 50, so that the arm may move the bolt slide 62. Thus, the latch 78 is formed with a lug 90, which is movable between the teeth 68 and 70. When the arm 50 is swung downwardly, to the position shown in broken lines in Fig. 4, it engages the lug 90 and swings the latch 78 to the left, away from the post 86, so as to unlatch the bolt slide 62. The arm 50 is then able to push the tooth 70 downwardly. On the return movement of the arm 50, it misses the tooth 70, but engages the lug 90 and releases the latch 78 from the post 86. The arm 50 is then able to move the tooth 68 upwardly so as to shift the bolts 54 to their locked positions.

The illustrated lock is arranged so that the hub 46 will be rendered inaccessible to the burglar if he pulls out the cylinder 18. This is accomplished by providing a cover plate 94, which is movable so as to cut off the normal access to the hub 46, if the cylinder 18 is pulled. It will be apparent that the cover plate 94 is slidable within a channel-shaped guide 96, which is secured to the plate 48. Normally, the cylinder shaft 42 passes through holes 98 and 100 in the guide 96 and closure plate 94 respectively. These holes are kept aligned by the engagement of the cylinder shaft 42 with the closure plate 94. If the cylinder is pulled, the shaft 42 will be withdrawn from the holes 98 and 100. The closure plate 94 is then shifted to the right, as seen in Fig. 5, by the spring 102. In its shifted position, the plate 94 covers the hole 98. Thus, the burglar will be prevented from inserting an instrument through the hole 98 so as to engage the hub 46 and open the lock.

The burglar may then attempt to drill a hole through the closure plate 94. This may be rendered difficult by making the plate 94 of an extremely hard steel. Alternatively, the modified arrangement of Fig. 7 may be employed. In this case, a ballbearing 104, made of hardened steel of the like, is mounted for free rotation in a socket or seat 106 formed in the plate 94. The ball 104 may be retained in the seat 106 by an apertured plate 108 welded or otherwise secured to the plate 94. It will be apparent that the ball 104 is positioned so that it will be opposite the hole 98 when the closure plate 94 is in its released position, in which it covers the hole 98. If an attempt is made to drill through the hole 98, the ball 104 will rotate and will prevent the drill from cutting. The tendency will be for the drill to slip laterally off the ball 104. This may very well cause the drill to break.

As an added protection, the illustrated lock 10 is provided with means for positively preventing operation of the lock if the cylinder 18 is pulled. The device for disabling the lock is controlled in this instance by the movable closure plate 94. In its normal position, the closure plate 94 prevents the lock from being disabled. If the closure plate 94 is released by the withdrawal of the

shaft 42, it will be moved to its released position by the spring 102. This movement of the plate 94 causes the disabling device to operate.

In the illustrated construction, the disabling device includes a locking pin or plunger 112 (Fig. 2) which is adapted to enter a hole 114 in the latch 78, so as to prevent the latch from being swung away from the post 86. With the latch 78 thus held movable, it is impossible to move the bolt slide 62.

The illustrated pin 112 is also adapted to enter a hole 115 in the plate 48, and a hole 118 in the bolt slide 62. Thus, the pin 112 is also arranged to lock the bolt slide 62 directly against movement.

Normally, the pin 112 is held in its retracted position by the closure plate 94. In this position, the pin 112 is disengaged from the holes 114, 116 and 118, so that the lock is free to operate. It will be seen that the pin 112 is slidable in a tubular guide 120, extending forwardly from the channel 96. The guide 120 may be recessed into a blind bore formed in the door 14. A spring 124 biases the pin 112 rearwardly so that it tends to enter the holes 114, 116 and 118. However, when the closure plate 94 is held in its normal position by the cylinder shaft 42, the pin 112 engages the front of the plate 94 and thereby is prevented from being moved rearwardly by the spring 124.

When the cylinder shaft 42 is withdrawn from the hole 100, the plate 94 is moved to the right, as seen in Fig. 2. Thus, the plate 94 is moved away from the pin 112. In this way, the pin 112 is released so that the spring 124 can push it rearwardly into the holes 114, 116 and 118. The lock is thereby positively disabled. Even if the burglar drills through the closure plate 94, he will be unable to move the latch 78 or the bolt slide 62. Once the pin 112 is moved rearwardly, it prevents the closure plate 94 from being shifted back to its original position.

The lock 10 is arranged so that the locking pin 112 may be moved forwardly out of the holes 114, 116 and 118, when the lock is being installed or reset. In the illustrated construction, a hole 128 is provided in the exposed wall 72 of the housing 12. The hole 128 is aligned with the pin 112, so that a rod or wire may be inserted through the hole 128 to push the pin 112 into its guide 120. The closure plate 94 has a prong 130 which extends outside the housing 12 through an opening 132 therein. Thus, the plate 94 may be reset simply by pushing the prong 130 inwardly, while the pin 112 is being held in its guide by the wire or rod. By carefully withdrawing the wire while pushing on the prong 130, the plate 94 may be moved in front of the pin. The cylinder 18 may then be inserted so that the cylinder shaft 42 will retain the plate 94 in its normal position. The hole 128 may be tapped so it may be closed with a screw 134.

It will be apparent that the present invention will considerably delay and impede the efforts of a burglar to open the lock by pulling the cylinder. If he pulls the cylinder, the withdrawal of the cylinder shaft 42 will release the plate 94 so that it will be moved to the right by the spring 102 (Fig. 5). In this position, the plate 94 covers the hole 98, so that the burglar will not be able to insert an instrument through the hole to operate the lock. The provision of the rotatable ball 104 will make it extremely difficult for the burglar to drill a hole through the plate 94.

Moreover, the movement of the plate 94 to the right releases the pin 112. The spring 124 then moves the pin 112 rearwardly through the holes 114, 116 and 118. This prevents the latch 78 from being disengaged from the latch post 86. Accordingly, the bolt slide 62 cannot be moved. Moreover, the reception of the pin 112 in the hole 118 acts directly to prevent the bolt slide 62 from moving.

The lock may be reset by inserting a wire or the like through the hole 128 so as to push the pin 112 into its guide 120. The plate 94 may then be reset by pushing inwardly on the prong 130. When the cylinder 18 is

5

installed, the cylinder shaft 42 will retain the plate 94 in its normal position, and the plate will prevent rearward movement of the pin 112.

It will be apparent that locks may be made in accordance with the present invention at very little additional cost. It is quite feasible to provide kits for converting existing locks so as to take advantage of the present invention. Despite its low cost, the present invention provides a considerably enhanced resistance to the efforts of a burglar to open a lock.

Various other modifications, alternative constructions and equivalents may be employed without departing from the true spirit and scope of the invention, as exemplified in the foregoing description and defined in the following claims:

I claim:

1. A burglar-resistant lock, comprising a housing, a bolt movable inside said housing and extending outwardly therefrom, a latch movably mounted on said bolt, a stop engageable by said latch for preventing movement of said bolt, a rotatable member mounted on said housing for releasing said latch and moving said bolt, a key cylinder having an operating shaft extending therefrom, means on said rotatable member for disengageably receiving said shaft, a shutter movably mounted on said housing in front of said rotatable member, said shutter having an aperture therein for passing said shaft, a spring biasing said shutter in a direction to move said aperture away from said rotatable member, so that said shutter will cut off access to said rotatable member when said shaft is removed therefrom, said shaft being effective to retain said shutter with said aperture in front of said rotatable member when said shaft is engaged therewith, a pin for locking said latch and said bolt against movement, said latch and said bolt having apertures therein for receiving said pin, a second spring biasing said pin in a direction to enter said apertures in said latch and said bolt, said shutter being movable into the path of said pin for retaining said pin against movement into said apertures in said latch and said bolt, said shutter normally being positioned behind said pin when said aperture in said shutter is held in alignment with said rotatable member by said shaft, the release of said shutter by withdrawal of said shaft being effective to release said pin, said shutter having a ball rotatably mounted thereon and positioned for alignment with said rotatable member to resist drilling of said shutter when said shaft is withdrawn and said shutter is in its released position.

2. In a lock, the combination comprising a housing, a locking member movable in said housing, a rotatable operating member for moving said locking member, a key-receiving member having a shaft extending therefrom, means on said operating member for disengageably receiving said shaft, a shutter engageable with said shaft, means biasing said shutter against said shaft and adapted to move said shutter into a released position in front of said operating member to cut off access thereto when said shaft is withdrawn therefrom, a disabling member movable in said housing, means on said locking member for disengageably receiving said disabling member to prevent unlocking movement of said locking member, means biasing said disabling member in a direction to move said disabling member into engagement with said locking member, and means on said shutter for retaining said disabling member out of engagement with said locking member when said shutter is positioned against said shaft and such shaft is engaged with said operating member, the withdrawal of said shaft being effective to release such shutter and thereby release said disabling member.

3. In a lock, the combination comprising a housing having a locking member movable therein, an unlocking member movable in said housing for moving said locking member, a shutter movable on said housing between an inactive position and a closed position, said shutter cutting

6

off access to said unlocking member in said closed position, means biasing said shutter toward said closed position, a key-receiving member having a connecting element extending therefrom, said unlocking member having means for disengageably receiving said connecting element, said shutter being engageable with said connecting element and thereby being retained in said inactive position when said connecting element is engaged with said unlocking member, a disabling member movable in said housing between inactive and disabling positions, said locking member having means for receiving said disabling member when said disabling member is in said disabling position, said locking member thereby being retained against movement, means biasing said disabling member toward said disabling position, and means on said shutter for retaining said disabling member in said inactive position when said shutter is in its inactive position, disengagement of said connecting element from said operating member being effective to release said shutter, which in turn releases said disabling member to prevent movement of said locking member.

4. In a lock, the combination comprising a housing adapted to be mounted on the interior side of a door, a locking bolt movable in said housing, a rotatable operating member in said housing for moving said bolt, a key cylinder adapted to be mounted on the exterior side of the door, said cylinder having a shaft extending rearwardly therefrom, means on said operating member for disengageably receiving said shaft, a shutter movable on said housing between an inactive position and a closed position, said shutter being in front of said operating member to cut off access thereto when said shutter is in said closed position, means biasing said shutter toward said closed position, said shaft normally being effective to retain said shutter in said inactive position with said shutter engaged with said shaft, a disabling member movable in said housing between inactive and disabling positions, means on said locking bolt for receiving said disabling member to prevent movement of said bolt when said disabling member is in its disabling position, means biasing said disabling member toward said disabling position, and means on said shutter for retaining said disabling member in said inactive position when such shutter is in its inactive position, the disengagement of such shaft from said operating member being effective to release said shutter, which in turn releases said disabling member, said shutter having a ball rotatably mounted thereon and aligned with said operating member to resist drilling of said shutter when said shutter is in said closed position.

5. In a lock, the combination comprising a housing adapted to be mounted on the interior side of a door, a locking bolt movable in said housing, a rotatable operating member in said housing for moving said bolt, a key cylinder adapted to be mounted on the exterior side of the door, said cylinder having a shaft extending rearwardly therefrom, means on said operating member for disengageably receiving said shaft, a shutter movable on said housing between an inactive position and a closed position, said shutter being in front of said operating member to cut off access thereto when said shutter is in said closed position, means biasing said shutter toward said closed position, said shaft normally being effective to retain said shutter in said inactive position with said shutter engaged with said shaft, a disabling member movable in said housing between inactive and disabling positions, means on said locking bolt for receiving said disabling member to prevent movement of said bolt when said disabling member is in its disabling position, means biasing said disabling member toward said disabling position, and means on said shutter for retaining said disabling member in said inactive position when such shutter is in its inactive position, the disengagement of such shaft from said operating member being effective to release said shutter, which in turn releases said disabling member.

7

6. A burglar-resistant lock, comprising a housing, a bolt movable inside said housing and extending outwardly therefrom, a latch movably mounted on said bolt, a stop engageable by said latch for preventing movement of said bolt, a rotatable member mounted on said housing for releasing said latch and moving said bolt, a key cylinder having an operating shaft extending therefrom, means on said rotatable member for disengageably receiving said shaft, a shutter movably mounted on said housing in front of said rotatable member, said shutter having an aperture therein for passing said shaft, a spring biasing said shutter in a direction to move said aperture away from said rotatable member, so that said shutter will cut off access to said rotatable member when said shaft is removed therefrom, said shaft being effective to retain said shutter with said aperture in front of said rotatable member when said shaft is engaged therewith, a pin for locking said latch and said bolt against movement, said latch and said bolt having apertures therein for receiving said pin, a second spring biasing said pin in a direction to enter said apertures in said latch and said bolt, said shutter being movable into the path of said pin for retaining said pin against movement into said apertures in said latch and said bolt, said shutter normally being positioned behind said pin when said aperture in said shutter is held in alignment with said rotatable member by said shaft, the release of said shutter by withdrawal of said shaft being effective to release said pin.

7. In a lock, the combination comprising a housing, a locking member movable in said housing, a rotatable

8

operating member for moving said locking member, a key-receiving member having a shaft extending therefrom, means on said operating member for disengageably receiving said shaft, a shutter engageable with said shaft, means biasing said shutter against said shaft and adapted to move said shutter into a released position in front of said operating member to cut off access thereto when said shaft is withdrawn therefrom, a disabling member movable in said housing, means on said locking member for disengageably receiving said disabling member to prevent unlocking movement of said locking member, means biasing said disabling member in a direction to move said disabling member into engagement with said locking member, and means on said shutter for retaining said disabling member out of engagement with said locking member when said shutter is positioned against said shaft and such shaft is engaged with said operating member, the withdrawal of said shaft being effective to release such shutter and thereby release said disabling member, said shutter having a ball rotatably mounted thereon and aligned with said operating member to resist drilling of said shutter when said shutter is in said released position.

#### References Cited in the file of this patent

##### UNITED STATES PATENTS

|           |               |                |
|-----------|---------------|----------------|
| 881,031   | Schultz       | Mar. 3, 1908   |
| 1,691,030 | Benham et al. | Nov. 13, 1928  |
| 1,764,898 | Segal         | June 17, 1930  |
| 2,256,827 | Fowler        | Sept. 23, 1941 |