Oct. 26, 1948. B. D. ROBINS 2,452,151

CHAIN AND LOCK MECHANISM

Filed Jan. 21, 1947

Fig. 1.

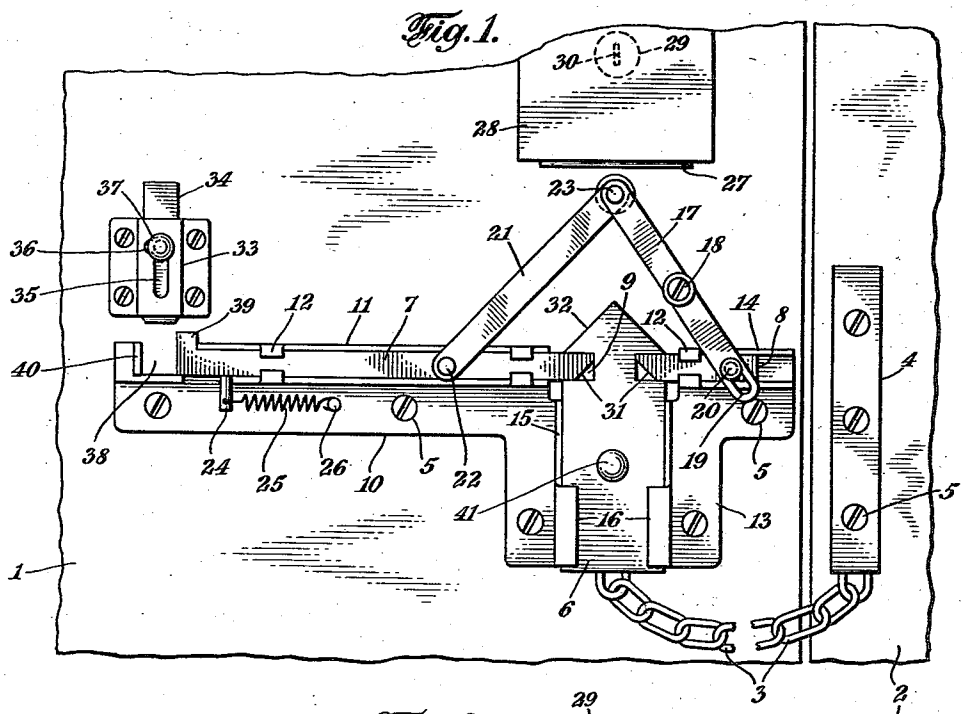
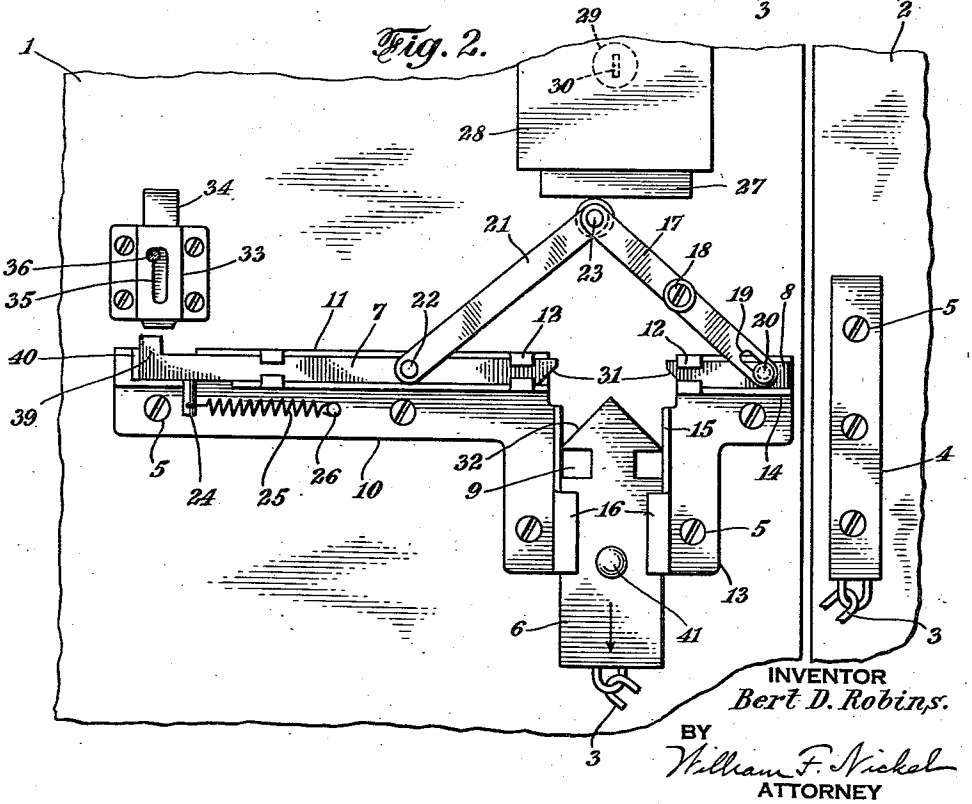


Fig. 2.



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Patented Oct. 26, 1948

2,452,151

UNITED STATES PATENT OFFICE

2,452,151

CHAIN AND LOCK MECHANISM

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Application January 21, 1947, Serial No. 723,411

7 Claims. (Cl. 70—93)

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This invention is an improvement in lock mechanism, and especially a lock mechanism designed to secure the doors of homes, apartments and other quarters or enclosures used for living purposes or in connection therewith.

In its preferred form the invention embodies a lock of the chain type to be mounted on the interior of an enclosure and prevent the opening, by intruders and other unauthorized persons, of the door at the entrance; and an important object is to provide an inexpensive and easily operated lock of this description that can also be controlled by a key; so that the chain can be easily and conveniently disengaged, when necessary, by the proper person from without. The invention in its preferred form is illustrated in the accompanying drawings, whereon:

Figure 1 shows the lock in holding position; and

Figure 2 is a similar view with the chain released.

On the drawings the numeral 1 indicates part of a door or the like, seen from the inside of the enclosure; and 2 is a fixed structure, such as part of the frame of the doorway or entrance in which the door is movably supported to swing to open and closed position. The lock comprises a flexible element or chain 3 affixed at one end to a bar or plate 4, attached to the frame or wall by screws or other fastening means 5. This chain is also attached at its opposite end to a locking member 6, adapted to be engaged by a pair of bolts 7 and 8. These bolts are in such position that they can enter notches or recesses 9 in the opposite sides of the member 8; and when the latter is so engaged, the door is secured but can be opened to a slight extent, so that no one can pass between it and the edge of the frame or wall 2.

The bolts 7 and 8 are horizontal, and the former is supported by a plate 10, affixed to the inner face of the door 1 by screws 5, and having guides 11 between which the bolt 7 is disposed. These guides have overturned projections 12 which engage the outer side of the bolt 7 and prevent displacement from the groove between said ribs or guides. The other bolt is disposed at the top of a plate 13, also fastened to the door by screws 5, and lies between similar but shorter guides with similar projections 12. The two bolts 7 and 8 are in line with each other; and the member is arranged vertically in a space between the plates 10 and 13. These plates are bent outward at their adjacent edges to form ribs or guides 15 at the sides of the catch, and these ribs have projections 16 so that the member 6 is retained between the

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guides 15. So long as the retaining member 6 is held between the guides 15, the door can be swung to open position only to the extent of the slack in the chain 3.

The bolts 7 and 8 are connected by levers 17 and 21, the former being pivoted to the door on a journal 18. At one end the lever 17 has a slot 19 in which is a pin 20 connecting it to the bolt 8. At the other end the lever 17 is coupled to the lever 21; the latter being united at its lower extremity by a pin 22 to the other bolt 7. These two levers 17 and 21 are mounted on the door in position to present an inverted V. Obviously pressure upon the pin 23 joining the levers will force these levers to spread and move the bolts 7 and 8 away from each other. The bolt 7 has a projection 24, connected by a tension spring 25 to a fixed pin 26 on the plate 10. The force of this spring is exerted on the movable parts or levers 17 and 21 to move the bolt 8 towards the bolt 7. When the member 6 is in the position shown in Figure 1, with the bolts 7 and 8 in the recesses 9, the member 6 is held fast, and the door can be opened only far enough to leave a small space or crack between it and the member 2, large enough to allow the occupant to peer out; but not enough to allow a body to pass it. To permit the door to be fully opened the levers 17 and 21 must be depressed to withdraw the bolts 7 and 8 and release the member 6. This manipulation can be effected from the inside of the enclosure; but with ordinary chain locks the door cannot be released from the outside. The chain can always be loosened by pulling back on the projection 39.

With my invention, the door equipped with the member 6 and the other parts above described can be opened from the outside also by means of a locking device with a keyhole exposed on the outer face of the door 1. This device comprises a movable bolt 27 in a casing 28 attached to the inner face of the door just above the junction point 23 of the levers 17 and 21. The bolt 27 is actuated by suitable mechanism in the casing 28, controlled by a key-barrel 29 which can only be operated by a key in the keyhole 30. The bolt 27 is usually withdrawn, but when a key is inserted into the hole 30 and turned, the bolt 27 is projected and caused to press downward upon the tops of both levers 17 and 21. Then the bolts 7 and 8 are retracted and the member 6 drops out from between the guides 15; the door being thus fully released.

The ends of the bolts 7 and 8 are preferably bevelled adjacent the guides 15, and the upper end of the member 6 is tapered to a point as indi-

cated at 32. When the member 6 is to be engaged it is merely pushed upward, sliding between the guides 15 till the tapered upper end 32 slips past the bevelled ends 31 of bolts 7 and 8. The bevelled ends of bolts 7 and 8 are indicated at 31.

The member 6 can also be secured against release by operation of the bolt 27 by means of a latch mounted in a plate 33 screwed tight to the door 1, adjacent one end of the plate 10, and just above the bolt 7. This plate supports a vertical latch 34 in a bearing 35. This bearing has a slot 36 of the shape of an inverted L, and in the slot is a pin 37 attached to the latch 34 to move it up or down. The latch 34 will fit the bearing 35 loosely enough to allow the pin 37 to enter the horizontal part of the slot to keep the bolt in raised position. Beneath and in line with the latch 34 the plate 7 has a recess 38. When the bolts 7 and 8 are projected into the recesses 9 of the member 6, the shoulder 39 at the rear end of the bolt 7 engages the end of the upper rib 11 on the plate 10, exposing the recess 38. The end of the latch 34 can be dropped into this recess and then the bolt 27 cannot be made to act to retract the bolts 7 and 8. The door will not be released from the outside even if the proper key is inserted into the key-barrel 29. At the rear of the recess 38 of the plate 10 the edge is bent outward at 40 to serve as a stop, limiting the outward movement of the bolt 7. The member 6 has a knob 41 to make it easier to handle when it is inserted from below into the space between the ribs 15.

The chain lock mechanism can thus be adjusted to hold the door from the inside of the premises. When the owner goes out, he can reenter by thrusting a key in the cylinder 29; and when he is in the enclosure, the locking mechanism can be so set that the latch 34 will hold the bolts 7 and 8 against withdrawal, even if a key fitting the barrel 29 is employed. By lifting the latch 34 with the button or pin 37 and turning the latch 34 to put the pin 35 in the top of the slot 36, the member 6 is then left free to be controlled by the locking device 28 from without.

This lock mechanism thus constructed is simple and effective, easy to operate, and readily adjustable as set forth to afford security whether the occupant is at home or absent.

It is to be noted that the door can be released while it is ajar, simply by pulling backward on the projection 39. This will disengage the locking member 6. Closing of the door first in order to effect the disconnection of the chain is not necessary. A knob can be attached to the bolt 7 for the purpose.

Also, while I have shown the member 6 and bolts 7 and 8 as being square or angular in cross section, I may obviously give them a round form and mount them so as to be movable in tubular guides with side openings or slots for the pins 20 and 22, and the knob 41. These tubular guides can be affixed to the door in any suitable manner.

In place of tubular guides, bearing rings encircling the bolts at two or more points and suitably affixed to the door 1 can also be employed.

Further, without changing the combination in any respect, the lock can be so constructed as to omit the bolt 8 and use only the bolt 7 to engage the member 6. In this case the lever 17 will not extend far below the pivot 18.

Likewise, instead of a slidable latch 34, an ordinary pivoted catch can be substituted to engage the projection or shoulder 39. If the weight of the member 6 is not sufficient to cause it to drop out from between the guideways 15 when the bolts 7 and 8 are disengaged, a spring can be used to facilitate this action, the spring being attached to the bottom of the member 6 and to a fixed point on the door 1.

Having described my invention, what I believe to be new is:

1. Lock mechanism comprising a member for the inner face of a door or the like, a flexible element to attach said member to a fixed structure adjacent said door, movable means on the door to engage said member and hold it in securing position, said means including a pair of slidable bolts, one at each side of the member, and movable parts connecting said bolts so that they move in unison.

2. Lock mechanism according to claim 1, which also has a locking device operable from the outer side of the door to actuate said movable parts and cause the bolts to be retracted and release said member.

3. Locking mechanism according to claim 1, having a latch on the inner face of the door to engage one of said bolts and prevent the release of said member.

4. Lock mechanism comprising a member for the inner face of a door or the like, a flexible element to attach said member to a fixed structure adjacent said door, a pair of plates secured to the inner face of the door with a space between them to receive said member, said plates having their adjacent terminal edges shaped to form a guideway for said member, each plate also having a guideway for a bolt disposed at each side of said member, the latter having recesses to be engaged by the ends of said bolts, a lever pivoted on the door and connected to one bolt, a second lever pinned to the end of the first lever and to the other bolt, and a spring connected to one of said bolts and a fixed point to urge the same towards the member.

5. The lock mechanism according to claim 4, which also comprises a latch affixed to the door above one of said bolts, the plate carrying said bolt having a recess at the rear of the bolt for the latch to enter and prevent withdrawal of the bolts.

6. The lock mechanism according to claim 4, wherein the said levers are mounted on the door to form an inverted V above the bolts, and the door carries a locking device operable from the outer side of the door to engage the levers and effect the withdrawal of the bolts.

7. Lock mechanism comprising a member for the inner face of a door or the like, a flexible element to attach said member to a fixed structure adjacent said door, movable means on the door to engage said member and hold it in securing position, said means including a slidable bolt at one side of the member, and means including a movable part to actuate said bolt, and a latch on the inner face of said door in position to engage said bolt.

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