

Nov. 6, 1956

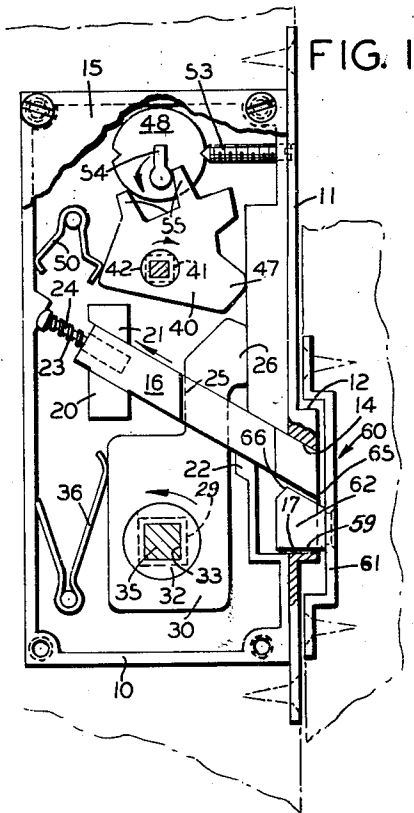
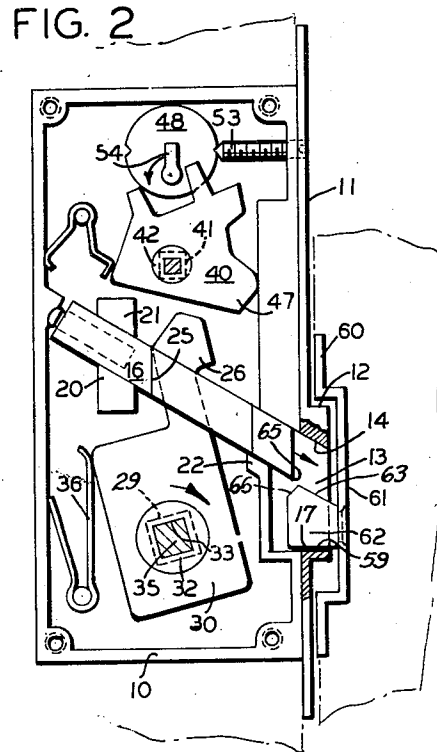
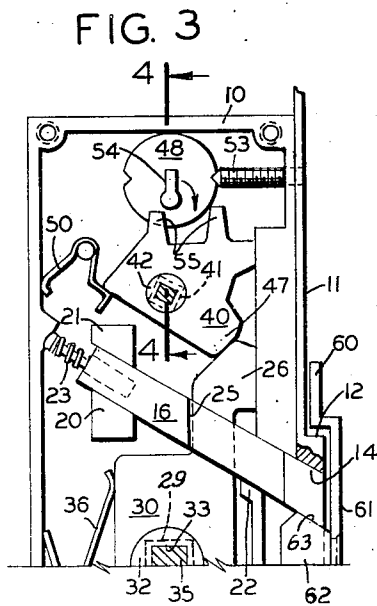
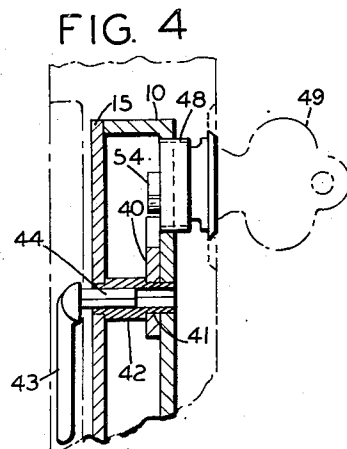
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2,769,330

LOCK HAVING A SLIDING LATCH BOLT

Filed Jan. 24, 1955

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

FIG. 5

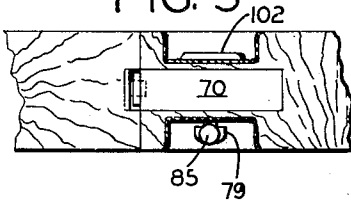


FIG. 6

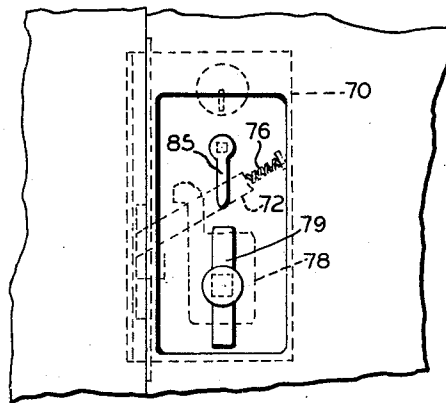


FIG. 7

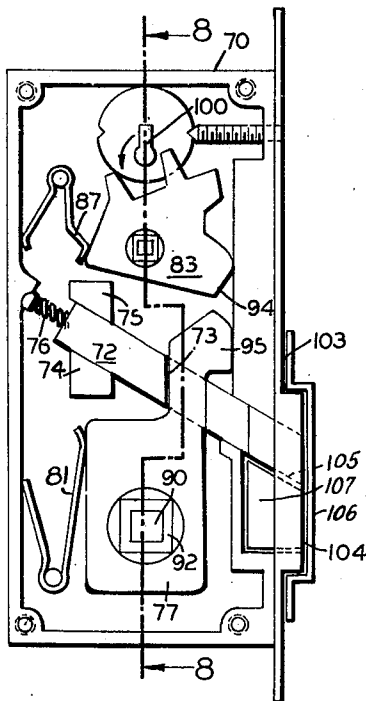
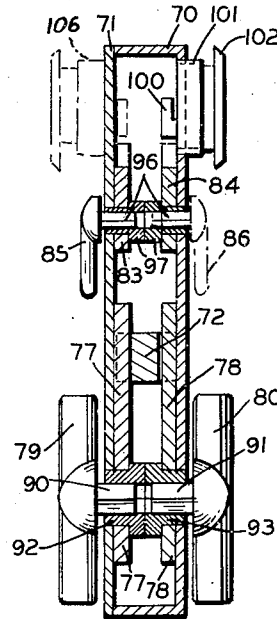


FIG. 8



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1

2,769,330

LOCK HAVING A SLIDING LATCH BOLT

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Application January 24, 1955, Serial No. 483,459

5 Claims. (Cl. 70—97)

This invention relates to locks and relates more particularly to a novel lock intended primarily for securing sliding doors and other structures as distinguished from hinged doors and other pivoted closures. The present application constitutes a continuation-in-part of my co-pending application Serial No. 416,753, and now abandoned.

The lock of the present invention includes a bolt section and a keeper section and if the lock is to be used for securing two sliding members which move along a substantially common plane, one structure may be carried by each. If, however, one member is stationary, the keeper section will usually be mounted thereon. In either event the member carrying the lock section may be moved in the direction of the other member and as the two are about to contact, a wedge-shaped element in the keeper encounters a diagonally movable spring-actuated latch bolt, causing it to retract into the lock case housing until it clears the projecting wedge-shaped element associated with the keeper; at which time the latch bolt snaps forwardly along its diagonal path of travel and its surface thus engages a complementary diagonal surface of the wedge-shaped element, thus firmly locking the parts against disengagement until the latch bolt is manually retracted.

An important object of the present invention is to provide an improved lock assembly for two abutting members and consisting of a housing enclosing a slidable latch bolt and a keeper or strike plate formed with a wedge-shaped latch which provides a definite interlock with the lock housing.

Another object of the invention is to provide a novel connecting device for locking two abutting members against longitudinal displacement and wherein there is provided a method of deadlocking the latch bolt retracting hub lever against unauthorized opening of the door. This is accomplished by the use of a dogging cam or cams. The dogging cam or cams may be manipulated by a thumb turn or by means of a key-operated cylinder or both. Either of these means may also be employed on one or both sides of the door, thus providing a lock for many specialized applications.

In the drawings:

Fig. 1 is a side elevation of a lock embodying the present invention, a portion of the cover plate being broken away to show the internal structure.

Fig. 2 is similar to Fig. 1 but shows the latch bolt in retracted position.

Fig. 3 shows the latch bolt in a locked position and restrained from internal travel by means of a locking dog.

Fig. 4 is a broken section taken on line 4—4 of Fig. 3.

Fig. 5 is a broken section taken through two members slidable relative to each other and showing a modified lock of the present invention wherein the manipulating means is recessed from the outer surfaces of the sliding door.

Fig. 6 is a side elevation of the lock.

2

Fig. 7 is a side elevation of the open housing.

Fig. 8 is a section taken on line 8—8 of Fig. 7.

The lock of the present invention includes a latch section and a keeper section. The latch section has a housing 10 provided with a face plate 11 having a forward extension 12 which is convexly curved on its front face, which face is formed with an opening 13 having a diagonally inclined upper wall 14 and a generally horizontal lower wall 17. The housing is arranged to be closed by a removable cover plate 15.

The latch bolt 16 moves diagonally within the housing and it is guided at its inner end by a pair of fixed bosses 20 and 21 and at its outer end it is guided by upper diagonal wall 14 and by a lug 22 formed on a recessed portion of the front wall of the housing. The latch bolt is urged forwardly by a spring 23 carried on a fixed pin 24 slidable into the latch bolt.

The latch bolt is formed on each side thereof with aligned shoulders, one of which is shown at 25 and the similar shoulder on the opposite side of the bolt is engaged by an upward extension 26 of a hub lever 30, which upward extension also limits outward travel of the latch bolt. This hub lever has a non-circular opening 29 which receives a knob hub 32 having a non-circular opening 33. A knob turn (not shown) has a non-circular spindle 35 received in opening 33. A spring 36 urges hub lever 30 in a clockwise direction.

It will thus be seen that when knob spindle 35 is rotated counterclockwise the latch bolt is retracted (Fig. 2). To lock the latch bolt against retraction an angular plate or dogging cam 40 is employed, said cam being provided with a non-circular opening 41 to receive a thumb knob hub 42. A thumb lever 43 (Fig. 4) for rotating dogging cam 40 has a non-circular spindle portion 44 received in the non-circular opening in the thumb knob hub 42. It will accordingly be seen that when thumb knob lever 43 is turned in a clockwise direction a dogging portion 47 moves from the position of Fig. 1 to the position of Fig. 3, thus effectually preventing movement of latch bolt retracting lever 30. Thumb knob lever 43 carried by spindle portion 44 is shown as being positioned on one side only of the lock but a similar spindle and thumb knob lever may be positioned in the other end of the opening.

To rotate the dogging cam from its neutral position of Fig. 1 to its dogging position of Fig. 3 a conventional key cylinder 48 is provided, said cylinder being actuated by a key shown in broken lines at 49. The cylinder body is restrained against rotation by a set screw 53. The cylinder has a cam 54 which is arranged to engage one of two spaced fingers 55 carried by the dogging cam. Thus when the cam 54 is rotated in the direction of the arrow in Fig. 1 it moves the dogging cam to the position of Fig. 3 and counter-rotation thereof moves it back into the position of Fig. 1. A spring 50 restrains free rotation of dogging cam 40. The dogging cam can at all times be actuated on the inside by turning thumb lever 43.

In Fig. 4 the thumb knob lever 43 is shown as being on one side of the door and the cylinder 48 on the opposite side thereof. In actual practice they may both be on the same side or a duplicate of lever 43 with spindle portion 44 may be inserted into the opposite end of the non-circular bore in thumb knob hub 42 as was earlier mentioned. Similarly the knob turn associated with non-circular spindle 35 may be positioned on the same side of the door as thumb knob lever 43, or two such levers may be provided.

The keeper section or strike consists of a plate 60 having an inwardly recessed portion 61 to receive the lock housing projection 12 guiding the latch bolt and a wedge-shaped block 62 having a diagonally inclined upper surface 63 which is aligned with the lower surface of the latch bolt.

3

The lower surface 59 of the block 62 is spaced only slightly above upper surface 17 of opening 13 in the forward extension 12. Accordingly it will be seen that when the parts are in the locked position of Fig. 1 the wedging action of the block 62 upwardly against the latch bolt and downwardly against the lower wall 59 of opening 13 effectively prevents the members from separating. If the latch section of the lock is secured to a sliding door and the keeper is secured to a fixed jamb the sliding door may be moved in the direction of the keeper and when the lower forward corner section 65 of the latch bolt contacts the upper outer corner section 66 of the keeper block the latch bolt necessarily retracts against the compression of spring 23 until the latch bolt clears the member 62, at which time the latch bolt again springs forwardly and rearward travel out of the keeper is prevented by contact of the bolt with the upper surface 63 of member 62.

In the modified form of the invention shown in Figs. 5, 6, 7 and 8, similar latch manipulating members are provided on opposite sides of the housing which is shown at 70. This housing is arranged to be closed by cover plate 71. The latch bolt 72 is the same as in the first embodiment and has shoulders 73 formed on opposite sides thereof and is guided for sliding movement at its rear end by bosses 74 and 75. A spring 76 urges the latch bolt outwardly. Movement of the latch bolt is effected from either side of the door by either one of two levers 77 and 78 which are actuated by knob turns 79 and 80 on the outside of the closed housing. Springs 81 urge levers 77 and 78 outwardly. Retraction of the latch bolt is restrained when both dogging cams 83 and 84 have been rotated to locked position by actuation of thumb knob levers 85 and 86, the latter being shown in broken lines. Springs 87 restrain rotation of the dogging cams.

Knob turns 79 and 80 have spindle portions 90 and 91 received in non-circular openings in aligned bushings 92 and 93 carried by levers 77 and 78 respectively, said bushing replacing the through bushing 32 in the first embodiment. Dogging cams 83 and 84 again have dogging portions 94 which move downwardly under extensions 95 of levers 77 and 78. Also in this instance thumb knob levers 85 and 86 have spindle shaft portions 96 carried in aligned, split bushings 97 supported in dogging cams 83 and 84.

In Fig. 8 dogging cam 84 is shown as being rotatable independently of hand lever 86 by means of lever 100 which is actuated by a key cylinder 101 having face plate 102. A key lock for the opposite side of the door is shown in broken lines at 106. It will be apparent from the foregoing that dogging cams 83 and 84 can dog levers 85 and 86 from both sides of the door and that they can be moved to non-dogging position from either side of the door. If cylinder 106 is employed it is preferred to omit thumb turns 85 and 86. The lock has a face plate 103 formed with a forward extension 104 provided with a diagonal opening 105 for the bolt. A strike plate 106 similar to that shown in Fig. 1 may be employed, such plate having a block 107 with its diagonally inclined upper surface which is engaged by the lower surface of the diagonally movable bolt. The use of the term "upper" in this connection and in the appended claims is relative since if the lock were turned upside down for mounting this surface would be "lower."

Except for the dual manipulating means the structure of Figs. 5 to 8 is substantially the same as the first embodiment and it further illustrates some of the possible variations of use by substituting parts.

What I claim is:

1. A lock for detachably securing together two structures and including a latch section adapted to be mounted in one structure and a keeper section adapted to be mounted in the other structure and provided with a wedge-shaped block having a downwardly and inwardly inclined upper surface and a generally horizontal lower surface, the latch section including a housing having a front opening which receives the block when the structures are moved into

4

abutting relationship, said opening having an inclined upper wall and a horizontal lower wall which substantially abuts the lower wall of the block, a spring-actuated latch-bolt slidably mounted in the housing for movement parallel with the inclined upper surface of the block and whose lower surface contacts said inclined upper surface when the latch-bolt is in extended position and prevents withdrawal of the block from the opening.

2. A lock for detachably securing together two structures and including a latch section adapted to be mounted in one structure and a keeper section adapted to be mounted in the other structure and provided with a wedge-shaped block having a downwardly and inwardly inclined upper surface and a generally horizontal lower surface, the latch section including a housing provided with a forward extension having a front opening which receives the block when the structures are moved into abutting relationship, said opening having an inclined upper wall and a horizontal lower wall which substantially abuts the lower wall of the block, a spring-actuated latch-bolt slidably mounted in the housing for movement parallel with the inclined upper surface of the block and whose lower surface contacts said inclined upper surface when the latch-bolt is in extended position and prevents withdrawal of the block from the opening, the latch-bolt being movable into the housing when it contacts the block as the structures are moved into abutting relationship.

3. A lock for detachably securing together two structures and including a latch section adapted to be mounted in one structure and a keeper section adapted to be mounted in the other structure and provided with a wedge-shaped block having a downwardly and inwardly inclined upper surface and a generally horizontal lower surface, the latch section including a housing having a front opening which receives the block when the structures are moved into abutting relationship, said opening having an inclined upper wall and a horizontal lower wall which substantially abuts the lower wall of the block, a spring-actuated latch-bolt slidably mounted in the housing for movement parallel with the inclined upper surface of the block and whose lower surface contacts said inclined upper surface when the latch-bolt is in extended position and prevents withdrawal of the block from the opening, a manually operated lever for retracting the latch-bolt, and a manually operated dogging cam for restraining movement of the lever.

4. A lock for detachably securing together two structures and including a latch section adapted to be mounted in one structure and a keeper section adapted to be mounted in the other structure and provided with a wedge-shaped block having downwardly and inwardly inclined upper surface and a generally horizontal lower surface, the latch section including a housing provided with a forward extension having a front opening which receives the block when the structures are moved into abutting relationship, said opening having an inclined upper wall and a horizontal lower wall which may contact the lower wall of the block when the parts are locked, a spring-actuated latch-bolt slidably mounted in the housing which retracts into the housing when it contacts the block as the structures are moved into abutting relationship, the lower surface of the latch-bolt contacting the inclined upper surface of the block with a wedging action to prevent withdrawal of the block from the housing so long as the latch-bolt is in extended position, a manually actuated lever for retracting the latch-bolt and means for dogging action of the lever.

5. A lock for detachably securing together two structures and including a latch section adapted to be mounted in one structure and a keeper section adapted to be mounted in the other structure and provided with a wedge-shaped block having a downwardly and inwardly inclined upper surface and a generally horizontal lower surface, the latch section including a housing having a front opening which receives the block when the structures

5

are moved into abutting relationship, said opening having an inclined upper wall and a horizontal lower wall which substantially abuts the lower wall of the block, a spring-actuated latch-bolt slidably mounted in the housing for movement parallel with the inclined upper surface of the block and whose lower surface contacts said inclined upper surface when the latch-bolt is in extended position and prevents withdrawal of the block from the opening, manually operable levers for retracting the latch-bolt from either side of the structures and manually operable dogging cams for restraining movement of the levers from either side of the door.

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