July 28, 1970 D. P. BOWLING 3,521,922

LOCK ASSEMBLY

Filed Dec. 9, 1968

FIG.1

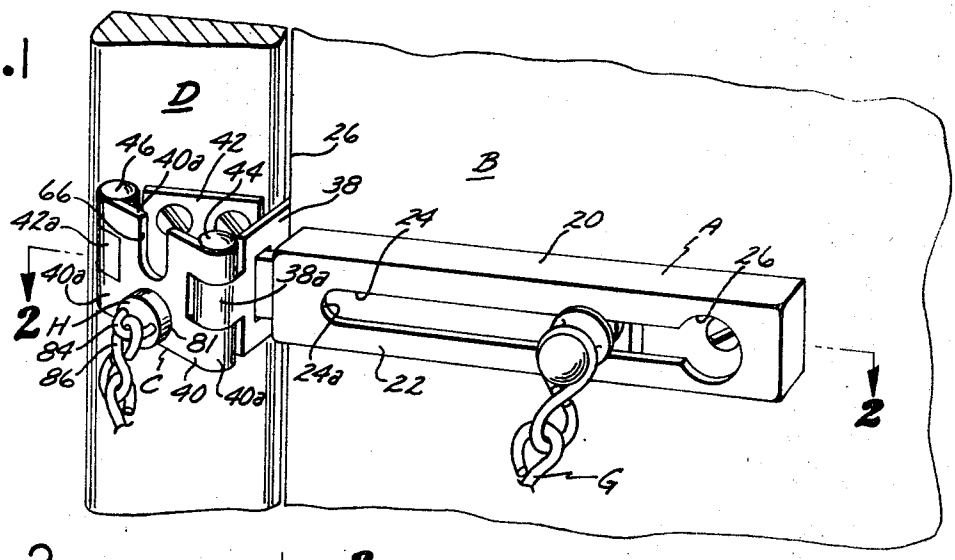
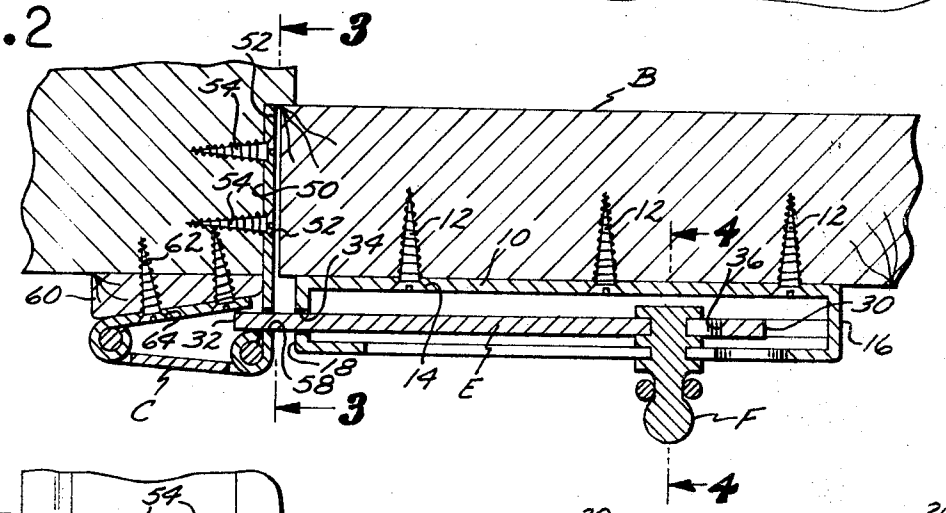


FIG.2



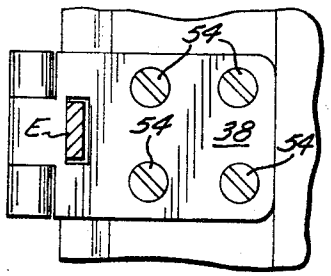


FIG.3

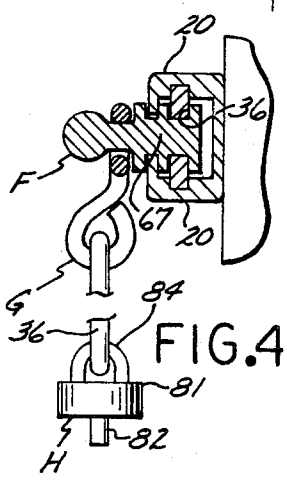


FIG.4

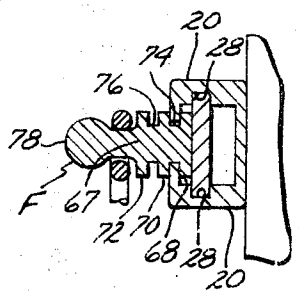


FIG.5

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LOCK ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A lock comprising a pivotally connected multiple plate keeper assembly that is attachable to a door jamb, which assembly includes a chain that is connected to an actuator, with the actuator being adapted to be removably supported in a predetermined position on the assembly. The lock further includes an elongate longitudinally slotted housing secured to a door in horizontal alignment with the keeper assembly. A slidable bolt is contained in the housing, and may be moved by the actuator to engage the keeper assembly and positively lock the door. The actuator is also capable of removably engaging the slotted housing to hold the door in a locked position, but one in which the door may be partially opened.

BACKGROUND OF THE INVENTION

Field of the invention

A bolt and chain type lock in which the bolt may be used to positively lock a door, which chain is used to lock the door in such a manner that the door may be opened to a desired degree.

Description of prior art

In the past it has been common practice to equip doors with chain lock assemblies in which the chain is secured to the inner face of a door jamb. The chain supports a slotted member that may removably engage an elongate housing mounted on the inner surface of a door. The chain and slitted member cooperate with the housing to permit the door to be partially opened, yet still remain in a locked condition. The operational disadvantage of this early type of lock is that the support for the chain may be easily stripped from the supporting door jamb should a potential intruder exert a substantial force against the door exterior.

The present invention overcomes the operational disadvantages of prior locks by providing one in which a slidable bolt serves to positively lock the door in a closed position, together with a chain that cooperates with a housing to lock the door in a position where the door may be partially opened.

SUMMARY OF THE INVENTION

A lock that includes a keeper plate assembly of novel design, a longitudinally slotted housing, a chain anchored to the keeper plate assembly, an actuator connected to the chain, and a bolt slidably mounted in the housing. By means of the actuator, the bolt may be moved to engage the keeper plate assembly to positively lock the door in a closed position. The actuator may also be used to removably engage the housing to lock the door, but in

such a manner that the door may be partially opened if desired.

A major object of the invention is to supply a lock assembly that is easily mounted on a door and associated door jamb by use of a screwdriver only, and one which when so mounted, permits the door to be positively locked in a closed position, or so locked that the door may be opened to a predetermined degree.

Another object of the invention is to furnish a door lock that will remain in place and in a locking condition, even when the door is subjected to a substantially inwardly directed force from the exterior thereof.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the lock assembly mounted on a door and associated door jamb;

FIG. 2 is a longitudinal cross-sectional view of the device shown in FIG. 1, taken on the line 2—2 thereof;

FIG. 3 is an end elevational view of the keeper plate assembly, taken on the line 3—3 of FIG. 2;

FIG. 4 is a fragmentary transverse cross-sectional view of the device, taken on the line 4—4 of FIG. 2; and

FIG. 5 is the same view shown in FIG. 4, but with the actuator disposed in a second position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In FIG. 1 it will be seen that the invention includes an elongate housing A secured to the interior surface of a door B, which housing is in alignment with a keeper plate assembly C affixed to an associated door jamb D. An elongate bolt E is slidably disposed in housing A, and when an actuator F is disposed in a first position in housing A, the bolt E can be moved to the left, as viewed in FIGS. 1 and 2, to positively engage the keeper plate assembly C.

A first end of a chain G is secured to the outer portion of actuator F (FIG. 1). The second end of the chain G is anchored to keeper plate assembly C by a fastener H. The door B may be opened to a limited extent when actuator F is in engagement with housing A, with the width of the opening being determined by the length of the chain G.

In detail, it will be seen that the housing A is elongate, and includes a backing plate **10** that abuts against the interior surface of the door B, rigidly secured thereto by screws **12** or other conventional fastening means. The screws **12** (FIG. 2) extend through longitudinally spaced openings **14** formed in backing plate **10**. First and second end walls **16** and **18** project forwardly from plate **10**, as well as side walls **20**. The forward edges of end walls **16** and **18** and side walls **20** merge into a front plate **22** that is parallel to backing plate **10**. An elongate slot **24** is formed in plate **22**, and the right-hand end of this slot (FIG. 1) develops into a circular opening **26** of substantially greater diameter than the width thereof. The slot **24** terminates on the left in an end portion **24***a* that is disposed adjacent to the free vertical edge of the door B.

Longitudinally extending, vertically aligned grooves **28** are formed on the interior surfaces of side walls **20**, as may best be seen in FIGS. 4 and 5. Grooves **28** are slidably engaged by bolt E which is of rectangularly transverse cross section. The length of bolt E is such

that when a first end **30** thereof is in contact with the first end wall **16**, a second end **32** of the bolt projects slightly beyond an aperture **34** formed in the second end wall **18**.

A circular opening **36** is formed in bolt E and is in transverse alignment with opening **26** when first end **30** is in contact with first end wall **16**. The diameter of opening **36** is greater than the width of the slot **24**.

Keeper assembly C includes first, second, and third plates **38**, **40** and **42**, respectively, provided with interengaging arcuate projections **38***a*, **40***a*, and **42***a* that are pivotally connected by pins **44** and **46**, as shown in FIG. 1. A number of spaced openings **52** are formed in first plate **38** through which screws **54** extend to engage door jamb D. Plate **38** also has a bolt-receiving aperture **56** therein that is horizontally aligned with aperture **36** when door B is in the closed position illustrated in FIG. 2. Third plate **42** is disposed under second plate **40**, as shown in FIG. 2, and abuts against a vertical moulding strip of wood **60** normally provided on a door jamb D. A number of screws **62** extend through spaced openings **64** in third plate **42**, and engage both moulding strip **60** and the door jamb D. An elongate recess **66** is formed in second plate **40** that extends downwardly from the upper edge **40***a* thereof.

The actuator F (FIG. 2) includes an elongate shank **67** from which first, second, and third flanges **68**, **70**, and **72**, respectively, project transversely. Flanges **68**, **70**, and **72** cooperatively define first and second circular recesses **74** and **76** therebetween, and these flanges are smaller in diameter than that of opening **26** to permit insertion thereof within housing A. Flanges **68**, **70**, and **72** are also greater in diameter than the width of the slot **24** to prevent inadvertent separation of the actuator from the housing. Actuator F includes an outwardly disposed knob **78** on shank **67**, which knob may be manually engaged to manipulate the actuator.

The chain G includes a loop **80** that engages shank **66** between knob **78** and third flange **72**, as shown in FIGS. 4 and 5.

The fastener H (FIGS. 1 and 4) includes a body **81** from which a rivet shank **82** projects. The shank **82** extends through an opening (not shown) in plate **40** below slot **66**, and the inner end of this shank is expanded to secure the body **81** to second plate **40**. A U-shaped member **84** extends forwardly from body **81**, and engages an end link **86** of chain G. Housing A is secured to door B in the position shown in FIGS. 1 and 2 by use of the screws **12**. The keeper plate assembly C is likewise affixed to the door jamb D (FIGS. 1 and 2), in horizontal alignment with housing A (FIG. 1).

When it is desired to positively lock the door B in a fully closed position, actuator F is extended through openings **26** and **36** to permit first recess **74** to engage the bolt E. The bolt E may then be moved to the left to so dispose the aperture **58** (FIG. 2) that door B is positively locked in a closed position.

To permit the door B to be opened to a limited degree but still remain locked, the actuator F is partially inserted in housing A and moved to the left (FIG. 1) whereby the first groove **74** slidably engages that portion of front plate **22** adjacent slot **24**. While the door B is locked, it can then be moved into an open position until actuator F contacts end **24***a* of slot **24**. Thus, it will be seen that the invention permits the door B to be either positively locked in a closed position, or locked in a position where the door may be partially opened.

Both the housing A and keeper plate assembly C are quickly and easily installed, with the only hand tool required for this operation being a screwdriver. Because of the pivotal connections between the plates **38**, **40**, and **42**, the keeper plate assembly C may be installed equally well on a door jamb D having a moulding strip **60**, as well as on a door jamb not so equipped.

It will be particularly noted that the screws **54** are disposed in a direction normal to that in which force is exerted on the open door B, and as a result, the keeper plate assembly C cannot be stripped from the door jamb D by a potential intruder. The slot **66** may be removably engaged by the actuator F when the latter is not in use, with the chain G being supported from the keeper plate assembly C as a depending loop.

I claim:

1. A lock assembly for selectively maintaining a hinged door in either a first position where it is positively locked relative to an associated door jamb or a second position where it may be opened to a predetermined limited extent relative to said door jamb, comprising:

(a) an elongate housing defined by a backing plate, two parallel side walls, first and second end walls, and a front plate, in which front plate a longitudinal slot is formed that develops into a circular opening adjacent said first side wall, and a first aperture in said second side wall;

(b) first means for securing said housing in a horizontal position on an inner surface of said door, with said second end wall being adjacent a free vertical edge of said door;

(c) a bolt slidably mounted in said housing and at all times in engagement with said first aperture, said bolt having a second opening formed therein that may be aligned with said first opening, with said bolt being of such length that when said first and second openings are inalignment said bolt is in contact with said first side wall, and a first end of said bolt does not project beyond said free edge of said door;

(d) an elongate actuator having first, second, and third spaced flanges thereon that are smaller in diameter than that of said first and second openings, but greater than the width of said slot, with said first and second flanges, when said actuator is extended through said first and second openings, engaging said bolt to permit said bolt to be moved toward said jamb, and when said first and second flanges are in engagement with that portion of said front plate adjacent said slot said actuator is permitted to be moved longitudinally relative to said housing until said actuator contacts the end of said slot most remote from said first opening;

(e) a keeper plate assembly including a plurality of plates pivotally connected to one another, with one of said plates being mounted on the face of said door jamb most adjacent said door and in horizontal alignment with said housing, in which mounted plate a bolt-receiving aperture is formed with another of said plates abutting against an inner face of said door jamb;

(f) second means for securing said keeper plate assembly to said door jamb; and

(g) a chain anchored to said keeper plate assembly and said actuator, with said chain serving to prevent unauthorized opening of said door beyond said predetermined extent when said first and second flanges are in engagement with said portions of said front plate adjacent said slot therein.

2. A lock assembly as defined in claim **1** which further includes:

(h) third means for removably supporting said actuator from said keeper plate assembly when said actuator is not in use.

3. A lock assembly as defined in claim **2** wherein said means comprises a downwardly extending slot in one of said plates outwardly disposed from said door jamb.

4. A lock asembly as defined in claim **1** wherein said first means comprises a plurality of screws that extend through openings in said backing plate to engage said door.

5. A lock assembly as defined in claim 1 wherein said second means comprise a plurality of screws that extend through openings in said plates to engage said door jamb, with said screws associated with said plate most adjacent said door being disposed substantially parallel relative to said door to prevent stripping of said keeper plate assembly from said door jamb should an inward force be exerted on asid door from the exterior thereof.

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