

Nov. 23, 1971

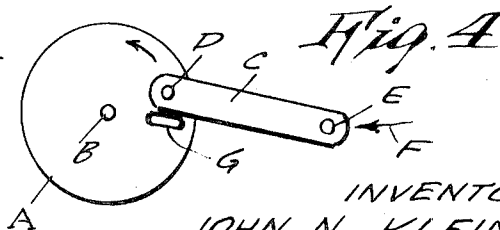
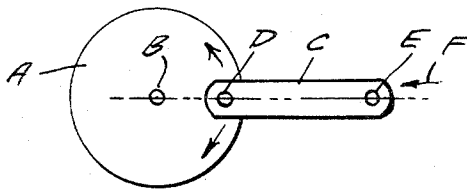
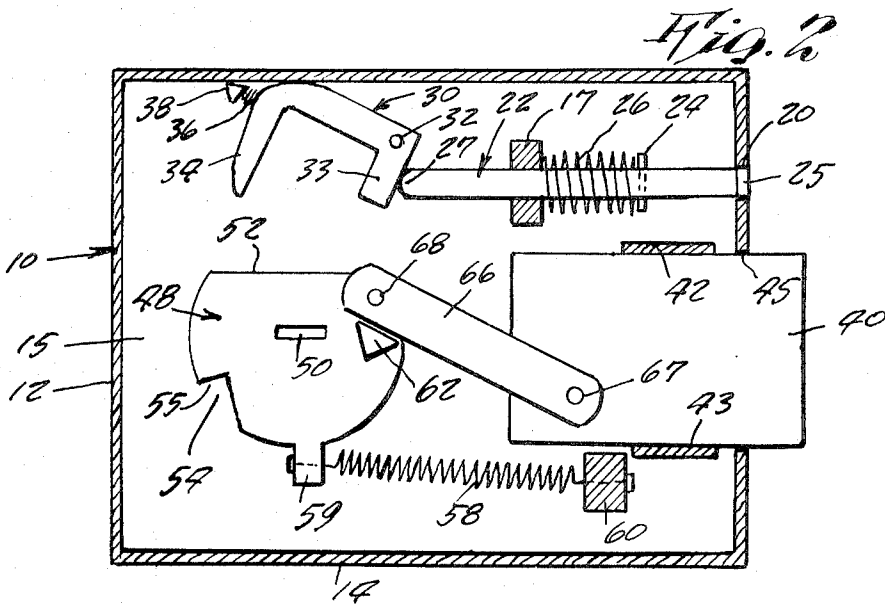
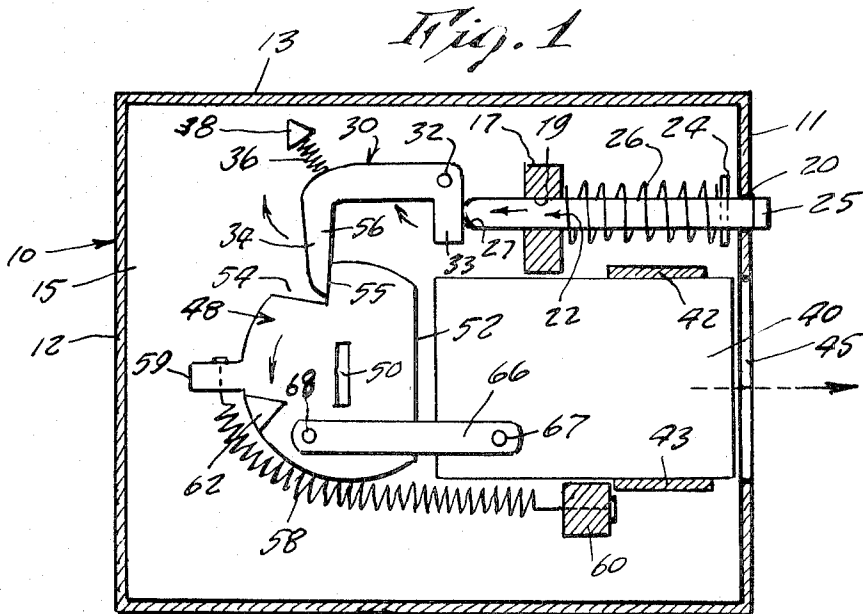
J. N. KLEIN

3,621,686

AUTOMATIC BOLT LOCK

Filed May 1, 1970

2 Sheets-Sheet 1



INVENTOR  
JOHN N. KLEIN

BY

Carl Miller

ATTORNEY

Nov. 23, 1971

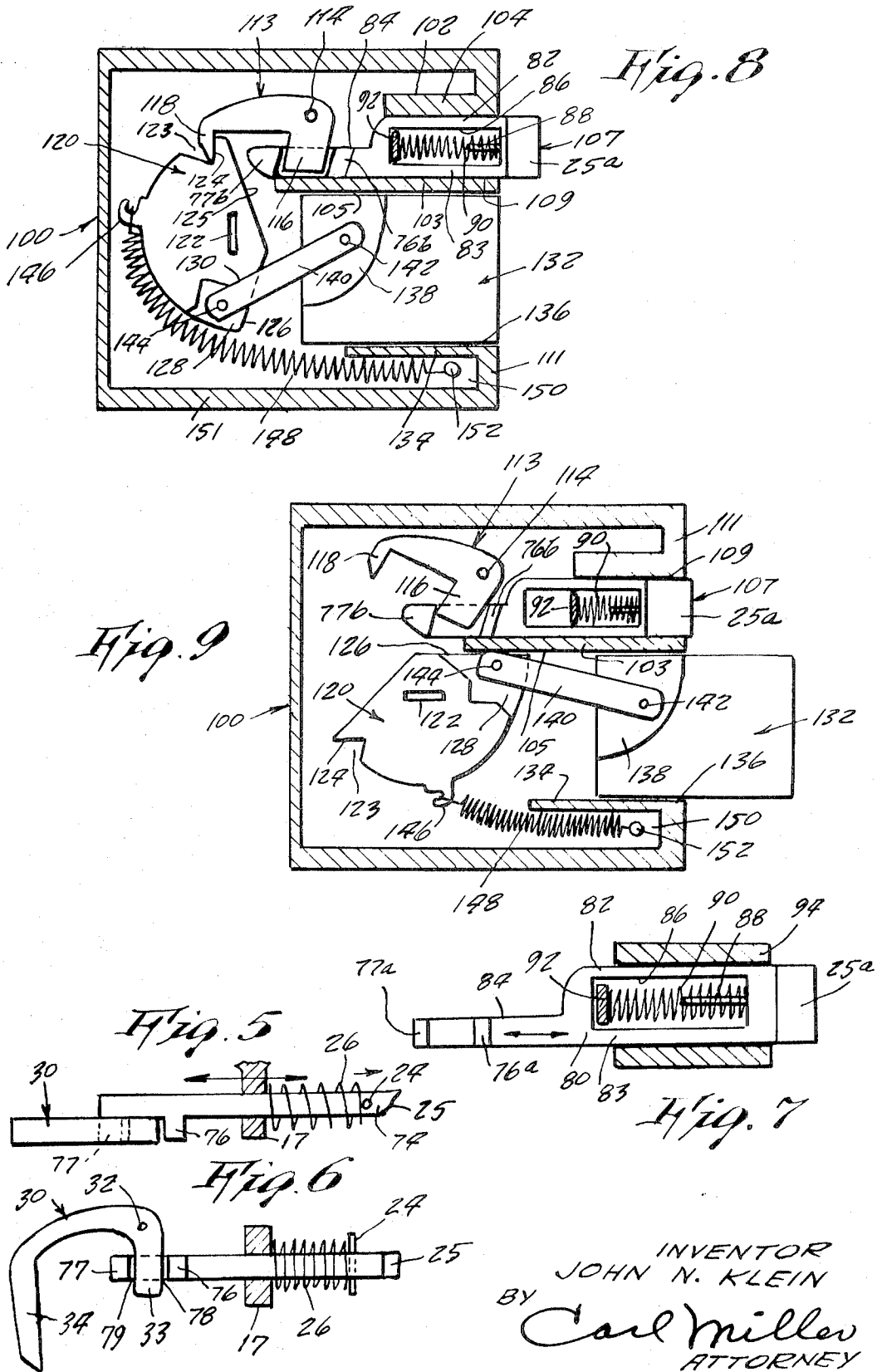
J. N. KLEIN

3,621,686

AUTOMATIC BOLT LOCK

Filed May 1, 1970

2 Sheets-Sheet 2



INVENTOR  
 JOHN N. KLEIN  
 BY *Carl Miller*  
 ATTORNEY

1

3,621,686

**AUTOMATIC BOLT LOCK**

John N. Klein, New Britain, Conn.  
(58 Wildwood Road, Wethersfield, Conn. 06109)

Filed May 1, 1970, Ser. No. 33,558

Int. Cl. E05b 15/04, 63/20

U.S. Cl. 70-157

11 Claims

**ABSTRACT OF THE DISCLOSURE**

A lock housing on a door having a sliding spring pressed striker bar projectable through an opening in the outer edge of the housing and movable inwardly by the door post when the door is closed. Rearwardly of the striking bar within the lock housing is a pivoted sear having spaced depending forward and rearward arms. The forward arm is adjacent the inner end of the striking bar and is engaged thereby when the latter is depressed. The rearward arm engages a rotatable cam and functions to prevent rotation thereof. The cam is fitted to a key slit and can be rotated by turning of the key inserted into the key slot. A spring member within the lock housing acts on the cam to rotate the same counterclockwise. A slidable lock bolt within the lock housing is projectable through the same edge of the lock housing and a link is pivotally connected at its ends to the cam and the lock bolt. Inward depression of the striker bar when the door is closed will activate the sear such that its rearward arm will disengage from the cam allowing the spring member to rotate the same counterclockwise wherein such movement will through the connecting link cause the lock bolt to move outwardly of the lock housing into locking engagement with the door frame. A spring engages the sear to hold its rearward arm in locking connection to the cam when the lock is open and a stop means on the cam functions to limit rotation of the cam when the lock bolt is wholly projected outwardly in its locked position.

This invention relates to an automatic bolt lock operating means for a door and has for its primary object the provision of a bolt locking device that is key operated only when it is desired to open the lock and which is automatically operative to lock the door without key operation and which cannot be forced open.

Another object of this invention is to provide a lock housing having therewithin a striker bar and a lock bolt both slidably movable within the lock housing and projectably from the outer edge thereof.

A further object of this invention is to provide within the lock housing a pivoted sear having depending spaced forward and rearward arms, the latter to be engaged by the striker bar when it is depressed to pivot the sear about its axis.

Yet another object of this invention is to provide within the lock housing a rotatable cam operatively connected to a key way to be rotated when a key is inserted thereto, the cam being designed to be engaged by the rearward arm of the sear such as to lock the cam against counter-clockwise rotation, the cam having a link connection to the slidable lock bolt such that with the rearward arm of the sear engaging the cam, the lock bolt is wholly depressed within the lock housing and the lock is open.

A further object of this invention is to provide a spring member connected to the cam to rotate the same counterclockwise when the rearward arm of the sear is disengaged from the cam by the action of the striker bar when the door is closed such as to project the lock bolt outwardly into door locking engagement with the door frame.

Still another object of this invention is to provide stop means associated with the cam for limiting its counterclockwise rotation.

2

Another object of this invention is to provide a spring associated with the cam for limiting its counterclockwise rotation.

Another object of this invention is to provide a spring associated with the striker bar for urging the same outwardly of the lock housing and a spring associated with the shear to hold the same when the lock is open in locking engagement with the door frame.

Still another object of this invention is to provide stop means associated with the cam for limiting its counterclockwise rotation.

Another object of this invention is to provide a spring associated with the striker bar for urging the same outwardly of the lock housing, and a spring associated with the sear to hold the same when the lock is open in locking engagement with the cam.

Further objects of the invention will appear as the description proceeds.

To the accomplishment of the above and related objects, my invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated and described within the scope of the appended claims.

In the drawings:

FIG. 1 is a side view in section of one form of the bolt lock device shown in its unlocked position,

FIG. 2 is a similar view showing the bolt lock device in its locked position.

FIGS. 3 and 4 illustrate diagrammatically the force point relationship in two positions of the link connection to the rotating cam (represented as wheel).

FIG. 5 is a plan view of the modified form of striker bar for the lock device of FIG. 1.

FIG. 6 is a side elevational view of the striker bar of FIG. 5.

FIG. 7 shows in side elevation a still further modified form of striker bar.

FIG. 8 is a side view in section of a modified form of bolt lock device (which is the preferred form) shown in open position.

FIG. 9 is a similar view showing the bolt lock device of FIG. 8 in locked position.

Referring to the drawings in detail, FIGS. 1 and 2 illustrate one form of bolt lock device and is seen to provide a rectangular lock housing 10 having vertical front and rear edged walls 11, 12, respectively, upper and lower edge walls 13, 14, respectively, and opposed side walls 15 (only one of which is shown). Located within the lock housing 10 is a support bracket 17 fixedly secured to at least one of the side walls 15, spaced rearwardly from the front edge wall 11 and adjacent to the top edge wall 13. An opening or bore 19 is provided in support bracket 17 and a corresponding opening 20 is provided in front edge wall 11 coaxial with opening 19. Slidably supported in the opening 19 of the support bracket 17 is a striker bar 22 of a length such that its forward end extends through opening 20 in the front edge wall 11 and its rear end position extends rearwardly of the support bracket. A pin 24 extends transversely through the striker bar 22 in fixed relation thereto, and a compression coil spring 26 surrounds the striker bar 22 with one end seated against pin 24 and the other end engaging the support bracket 17. The outer end portion of striker bar 22 is leveled as at 25 to facilitate depression thereof when the door is closed. The spring 26 acts to move and maintain the striker bar 22 in its outward projecting position, as seen in FIG. 1, when the lock is open as will be hereinafter described. The rear end 27 of the striker bar 22 is preferably rounded.

Immediately rearwardly of the striker bar 22 is a sear 30 mounted for up and down swinging movement on a pivot

pin 32. The sear 30 is of inverted U-shape to provide a forward depending arm 33 and a longer rear depending arm 34. The pivot pin 32 is located in line with the front sear arm 33, which latter is engaged by the rear terminal end of the striker bar 22 such that inward movement thereof will cause the sear 30 to swing upwardly in a clockwise direction about pivot pin 32. To hold the sear 30 in its down operative position and for the return the same to its down position there is provided a compression spring 36 disposed at an inclination, see FIG. 1, between the rear end of the sear 30 at a point in line with the rear arm 34 and a fixed abutment 38. Suitable means (not shown) are provided on the fixed abutment 38 and the sear 30 to maintain spring 36 in position.

Located beneath the striker bar 22 is a lock bolt 40 that is slidably supported for horizontal reciprocating movement between upper and lower guide supports 42, 43 fixedly positioned within the lock housing 10. Provided in the front end wall 11 of the lock housing is an opening 45 through which the lock bolt is projected into its locking position. Preferably the lock bolt 40 is formed as a rectangular body of high strength steel.

Rearwardly and in spaced relation to the inner end of the lock bolt is a cam 48 that is supported on the rotating key receiving cylinder of the lock (not shown) provided with a keyway 50 such that insertion of a key into the keyway and turning thereof will rotate the cam.

Cam 48 is circular sector shaped with its flat side 52 normally disposed opposite in spaced relation to the inner end of lock bolt 40, as seen in FIG. 1, when the lock bolt 40 is withdrawn in its non-locking position within the lock housing. Provided at the rear upper side of the cam 48, viewing figure is a notch 54 somewhat right angular in shape and defining a substantially vertical flat abutment face 55. Rear arm 34 of sear 30 is formed with a flat surface 56 and is of a length such as to engage the abutment face 55 of the cam to hold the same against counterclockwise rotative movement. A tension coil spring 58 is connected at one end to a radial lug 59 projecting from the cam and at its other end to a lug 60 fixed to the lock housing beneath lock bolt 40, the tension spring 58 acting in the cam to move the same counter-clockwise when the rear arm 34 of the sear 30 is moved out of engagement with the cam abutment face 55 as will be hereinafter described. Suitably positioned on the cam adjacent its lower side is a limit stop 62.

Lock bolt 40 is operatively connected to cam 48 by a rigid link 66 pivotally at its forward end connected to the lock bolt by pivot pin 67 and at its rear end by pivot pin 68 to the cam at a selected point circumferentially forwardly of limit stop 62. FIG. 1 shows the lock in open or unlocked condition, i.e., lock bolt 40 wholly withdrawn into the lock housing, cam 48 secured against counterclockwise movement by rear arm 34 of sear 30, beveled end 25 of striker bar 22 projected outwardly of the front edge 11 of the lock housing. When the door is closed the striker bar 22 will be depressed by the door frame against the pressure of the compression spring 26, the rear end 27 of the striker bar 22 which is preferably rounded and in engagement with the forward arm 33 of the sear 30 causing sear 30 to swing counter-clockwise about its pivot 32 thus moving rear arm 34 free of its abutting engagement with cam abutment face 55 and freeing cam 48. Under the tension pull of spring 58, cam 48 will be rotated counterclockwise imparting a forward thrust to link 66 to move the lock bolt 40 forwardly and projecting the front portion of the lock bolt into locking position with its keeper in the door frame (not shown), pivot pin 68 constituting the pivoted connection of link 66 to cam 48 will move to a point above the horizontal dead center position of the cam 48 as shown in FIG. 2 which illustrates the position of the associated parts of the lock when in locked position. At the same time limit stop 62 will be moved to lie directly beneath the link 66 at its rear pivotal connection 68. It is thus seen that the operation of the bolt

lock structure as described above is wholly automatic to establish a locked positioning of the lock bolt 40 in the door frame, and that no key action is required to close the lock.

5 The lock when closed as shown in FIG. 2 cannot be "jimmied" or forced open. This for the reason schematically shown in FIGS. 3 and 4, wherein the cam is represented by a wheel or disc A rotating about its axis B. The pivotal connection of the link C to wheel A is at D, and the pivoted connection of the link to the lock bolt 10 is at E. Pivot D is the force point of the link connection to wheel A. Arrow F indicates the force applied to the end and/or pivot E of link C. With wheel A free and rotated to the position where points B, D and E are in substantial horizontal alignment as seen in FIG. 3, force F acting on link C will cause wheel A to move either clockwise or counterclockwise, the theoretical dead center maintained position being ignored as actually point D will lie either slightly above or slightly below the true dead center position. However with wheel A rotated so that point D will pass its dead center position and the link C placed in an inclined position, as shown in FIG. 4, the application of force F will impart a counterclockwise movement to wheel A. By providing a limit stop G on the wheel directly below the link C at its pivot D it is seen that this counterclockwise movement is prevented by stop G engaging the underside of the link and thereby holding the link and wheel immovable under the action of force F. Thus, with the force point (pivotal connection 25 68) at the position shown in FIG. 2 above dead center, with the link 66 inclined and stop 62 below the lower edge of the link and pivot 68, the cam 48 link 66 and lock bolt 40 are immovably held in locked relation to each other and lock bolt 40 cannot be forced inwardly into the lock housing thus making the lock "jimmy-proof." The lock construction of FIGS. 1 and 2 can only be opened by insertion of a key designed to be accepted by keyway 50 to permit turning of the key. As the turning of the key can only be clockwise, this will cause the cam to rotate clockwise, tensioning the spring 58 and through link 66 causing the lock bolt 40 to slide completely back into the lock housing at which point the cam will be in the position shown in FIG. 1. On opening the door, spring 26 will move the striker bar 22 forwardly permitting sear 30 to drop down under the combined action of gravity and spring 36, thus bringing rear arm 34 into its abutting engagement with the abutment face 55 of cam 48 to hold the cam in its locked position against the action and/or force of spring 58. With the cam so locked in place, the key is withdrawn and the lock is set for automatic locking action when the door is closed.

FIGS. 5 and 6 illustrate a modified form of striker bar which dispenses with the need for the sear hold down spring 36 of FIG. 1. In this embodiment the main portion of the striker bar 74 is the same as the striker bar 22 as to its sliding support in support bracket 17, surrounding compression spring 26, fixed pin 24 and leveled forward end 25. The rear end portion of the striker bar 74, rearwardly of support bracket 17 is provided with a pair of longitudinally spaced projecting fingers 76, 77 located on the striker bar so as to lie normal to the depending forward arm of the sear 30. The spacing between fingers 76, 77 between which forward arm 33 is disposed is such as to provide a slight clearance 78, 79 between the fingers and the sides of the forward arm 33, as seen in FIG. 6. Thus, when striker bar 74 is depressed (when the door is closed) and moves inwardly within the lock housing finger 76 will engage the forward arm 33 of sear 30 to swing the same clockwise to cause the rear arm 34 to disengage from its holding position against cam 48. The striker bar 74 will hold the sear 30 in its raised position as long as the striker bar is depressed. When the door is opened upon unlocking of the lock as described hereinabove, the forward movement of the striker bar 75 under the action of spring 26 will cause the other finger

77 to engage the forward arm of the sear 30 to swing the same counter-clockwise and back to its position where rear arm 34 will engage with the cam abutment face 55. It is thus seen that the fingers 76, 77 on the striker bar 74 will hold the sear 30 in its raised or lowered position, and the sear 30 when in its lowered cam locking position is positively held in this position by the fingers thereby obviating the need for spring 36 as needed in the construction shown in FIG. 1.

FIG. 7 illustrates a further modification of the striker bar of FIGS. 1, 5 and 6. In this embodiment which is preferred form, the main forward body portion of the striker bar 80 is widened and is of uniform width to provide parallel upper and lower sides 82, 83. Lower side 83 is continuous to the rear terminal end of the striker bar 80, the rear end portion of the striker bar corresponding to that of FIGS. 5 and 6 such that the upper side 84 of the rear end portion is substantially below the upper side 82 by the size of at least half the width between sides 82, 83 as seen in FIG. 7. The rear portion of striker bar 80 is provided with spaced fingers 76a, 77a corresponding in all respects with fingers 76, 77 of FIGS. 5 and 6 in form and function, and the forward terminal end is beveled as at 25a. Provided in the forward main body portion is an elongated rectangular slot 86. At the forward end of slot 86 there is positioned a fixed centrally disposed centering pin 88 for a compression coil spring 90 which surrounds the pin and has its forward end sealed against the forward end of slot 86. The rear end of the spring 90 seats against a lug 92 that is fixed to the lock housing and extends into the slot 86 adjacent to its rear end where it functions also as a stop preventing removal of the striker bar from the lock housing. The forward main body portion of striker bar 80 is slidably mounted in a support bracket 94. In this embodiment the positioning and movement of the striker bar 80 effects a more positive action, has better control, possesses greater strength and solidity and is trouble free by virtue of the spring location within the slot and within the confines of the support bracket and the fact that the centering pin for the spring projects axially into the spring.

FIGS. 8 and 9 illustrate the preferred form of the automatic bolt lock. In this embodiment the lock housing 100 is interiorly provided with an integral upper grade support bracket 102 corresponding to that shown in FIG. 7 at 94 except that the lower guide wall 103 extends rearwardly beyond the upper guide wall 104 so that its rear end portion underlies the forward arm 33 of the sear 30. The bottom surface 105 of lower guide wall 103 is flat and horizontal for a purpose that will be hereinafter described. The striker bar 107 is substantially identical to the striker bar 80 of FIG. 7 and corresponding parts are given the same reference numerals. Provided at the rear end of striker bar 107 are longitudinally spaced laterally projecting fingers 76b, 77b with their opposed faces slightly inclined but otherwise corresponding in form and function with the spaced fingers 76a, 77a of FIG. 7. The striker bar 107 is slidably guided between lower and upper guide walls 103, 104 and is projectable through opening 109 in front end wall 111 of lock housing 100.

Sear 113 is generally similar to sear 30, is pivoted to the lock housing at pivot pin 114 in line with forward arm 116 slightly rearwardly inclined and positioned between fingers 76b, 77b of the striker bar 107. The rear arm 118 is relatively short and forms the same function as a cam lock as rear arm 34 of sear 30. A cam 120 having a keyway 122 is rotatively supported within the lock housing 100 by a key cylinder (not shown) in the same manner as cam 48. Cam 120 is formed with a notch 123 providing an abutment face 124 engageable by rear sear arm 118 in the open lock position shown in FIG. 8. The cam 120 is circle sector shaped to provide oppositely inclined flat sides 125, 126 that are directed substantially

vertically in the cam position of FIG. 8. The opposite end of cam 120 is laterally recessed as at 128 and is formed to provide an inclined shoulder stop 130. A rectangular shaped lock bolt 132 similar to lock bolt 40 is slidably supported between a lower guide support 134 integral with the lock housing 100 and the lower guide wall 103 of the support bracket, and is projectable through an opening 136 in the front edge wall 111. Formed in the upper left corner of the lock bolt 132 is lateral recess 138 facing in the same direction as recess 128 of cam 120. A link 140 similar to link 66 connects the cam 120 to the lock bolt 132, the forward end of the link being positioned in lock bolt recess 138 and is connected to pivot pin 142. The rear end of the link is seated in cam recess 128 and is connected to pivot pin 144. It is to be noted that in the open position of the lock as shown in FIG. 8, the lock bolt 132 is entirely withdrawn into the lock housing 100 and the inclined sides 125, 126 of the cam are opposite the rear vertical edge of the lock bolt, with link 140 downwardly inclined and shoulder stop 130 of the cam seated against the upper longitudinal edge of the link, thus limiting clockwise movement of the cam when in locked position by the sear rear arm 118 engaging abutment face 124. A hook 146 extends from the circular edge of the cam 120 between notch 123 and recess 128 to which hook one end of a tension coil spring 148 is connected. The spring is directed forwardly along the circular side of the cam 120 and extends into a pocket 150 formed between lower guide support 134 and the bottom edge wall 151 of the lock housing 100 with its front end connected to a lug 152. As seen in FIG. 8, spring 148 is placed under tension and exerts a force through hook 146 to turn cam 120 counter-clockwise.

The automatic operation of the lock to project the lock bolt 132 outwardly of the lock housing into locking engagement and not requiring the use of a key is the same as described above with reference to the embodiment shown in FIGS. 1 and 2. In the preferred embodiment of FIGS. 8 and 9 the lock bolt 132 is "jimmy-proof" in that it cannot be forced rearwardly once in its locked position by virtue of the fact that the inclined side 126 of the cam has been moved into abutting engagement with the underside 105 of the lower guide wall 103 as seen in FIG. 9. With the force point (rear pivot 144 of link 140) above dead center position and the link 140 downwardly inclined it is seen that any force applied to lock bolt 132 of "jimmy" the same cannot effect to move the lock bolt 132 rearwardly as link 140 cannot turn cam 120 counter-clockwise due to its abutting engagement of its side 126 with guide wall 103 at its underside 105. In the projected lock position of lock bolt 132, striker bar 107 is depressed pivoting sear 113 upwardly which disengages rear arm 118 from the cam abutment face 124, and as long as the lock is locked the striker bar 107 is depressed and the sear 113 is held raised by the finger engagement with the sear forward arm 116; unlocking of the lock is accomplished by the insertion of a key into keyway 122 to turn the cam 120 clockwise, and when thus turned to its vertical stopped position when shoulder 130 of the cam engages the link 140, and the door is opened, compressed striker bar spring 90 will force the striker bar 107 forwardly which movement due to the finger action of finger 77b on the forward arm 116 of the sear will pull the sear down to bring its rear arm 118 into engagement with the cam's abutment face 124 to lock the cam in the position shown in FIG. 8, thereby setting the lock parts for automatic closing of the lock when the door is closed and not requiring the use of a key.

While certain novel features of my invention have been shown and described and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes in the forms and details of the device illustrated and in its operation can be made by those

skilled in the art without departing from the spirit of the invention.

What I claim is:

1. An automatic bolt lock comprising:

- (a) a housing having front and rear, top and bottom edge walls, 5
- (b) a support bracket within said housing adjacent the top and front edge walls,
- (c) a striker bar slidably supported by the support bracket, 10
- (d) there being an opening in the front edge wall through which the forward end of the striker bar moves in its sliding movement,
- (e) the rear end of the striker bar extending rearwardly of the support bracket, 15
- (f) a pair of vertically spaced guide walls within said housing beneath said striker bar,
- (g) a lock bolt slidably supported by said guide walls,
- (h) there being an opening in the front edge wall through which the lock bolt moves in its sliding movement, 20
- (i) a rotatable cam mounted in said lock housing rearwardly of said lock bolt,
- (j) a link member pivotally connected at its ends respectively to said cam and lock bolt, 25
- (k) a sear member having a forward and a rear depending arm pivotally supported within said lock housing rearwardly of the striker bar and with its front arm operatively engaged by the striker bar,
- (l) an abutment face on the cam engaged by the sear member rear arm for holding the cam in a locked position, 30
- (m) a spring member connected to a part of the cam and to a fixed part in the lock housing for rotating the cam in a bolt projecting direction, 35

whereby, in the open position of the lock the forward end portion of the striker bar is projected outwardly of the front edge wall, the cam is held locked by the sear member rear arm and the lock bolt is withdrawn wholly within the housing; closing of the lock being automatically affected by the striker bar being moved inwardly into the lock housing by the engagement of its projected forward end with a fixed structure such as a door frame, rearward movement of the striker bar causing the sear member to swing upwardly disengaging its rear arm from the cam which will be rotated in bolt projecting direction by the spring member, said cam rotation through the link member moving the lock bolt in an outward direction with relation to the lock housing such that the forward end portion is moved into locking association with said fixed structure. 40 45 50

2. The automatic bolt lock of claim 1, wherein:

- (a) said cam is mounted on a rotatable key cylinder having a key-way, 55
- (b) a notch formed in said cam providing said abutment face engageable by the sear member rear arm,
- (c) the pivotal connection of the link to the cam relative to the cam axis of rotation being so located on the cam as to move from a first point below said axis when the cam is held by said sear member to a second point above said axis past dead center when the cam is freed and rotated counter-clockwise by said spring member to move the lock bolt to its locking position, and 60
- (d) stop means associated with the cam for limiting its counterclockwise movement beyond said second point, 65

whereby, said stop means will further act to prevent a forcing of the lock bolt to move the same rearwardly into said lock housing to open the lock. 70

3. The automatic bolt lock of claim 2, wherein:

- (a) a key insertable into said key-way may be turned to rotate the cam such that its link connection to the lock bolt will affect an opening of the lock by withdrawing the lock bolt inwardly into the lock housing. 75

4. The automatic bolt lock of claim 3, wherein:

- (a) said striker bar is a rod member extending through a bore in the support bracket,
  - (b) a fixed transverse pin extending through the striker bar adjacent its forward end and interiorly of the lock housing,
  - (c) a compression coil spring surrounding the striker bar with its ends respectively engaging said transverse pin and an opposed side of the support bracket,
  - (d) said sear being of inverted U-shape,
  - (e) pivot means on the bright portion of the sear in line with its forward arm pivotally supporting the sear within the lock housing, and
  - (f) a spring element disposed between a fixed abutment and the bright portion of the sear opposite its pivotal connection, operative to hold the sear in a down position to maintain locking engagement of the rear arm with the cam abutment face and to return the sear to its locking cam engagement.
5. The automatic bolt lock of claim 4, wherein said stop means associated with the cam comprises:
- (a) a limit stop rigid with the cam on the same side thereof as the link and its pivotal connection to the cam.
  - (b) a flat face on said limit stop directed forwards said link, and
  - (c) said limit stop being disposed on said cam at a location such that when said cam is rotated to a point where the link has moved the lock bolt outwardly of the lock housing into its locked position, said limit stop will present its flat face directly beneath said link adjacent its pivotal connection to the cam, and engagement of said face with said link will prevent further like movement of the cam and thus prevent inward movement of the lock bolt should the latter be forced in an attempt to open the lock.
6. The automatic bolt lock of claim 5, wherein:
- (a) said limit stop is circumferentially spaced from said cam notch and in the rear held position of the cam said limit stop lies below said notch,
  - (b) said spring member being a tension coil spring lying in part on the periphery of the cam,
  - (c) the part of the cam to which one end of the spring member is connected being a radial lug disposed between the notch and limit stop, and
  - (d) the fixed part of the lock housing to which the other end of the spring member is connected being a fixed lug within the lock housing located beneath the lock bolt and adjacent to bottom and front edge walls of the lock housing.
7. The automatic bolt lock of claim 3, wherein:
- (a) said striker bar comprises:
    - (a') a forward main body portion having a rectangular slot therein,
    - (b') an integral rear bar extension,
    - (c') the slot in said main body portion providing vertically spaced horizontal top and bottom sides and opposed vertical front and rear end sides, and
    - (d') a horizontal centering pin projecting rearwardly from the front end side of the slot,
  - (b) a lug fixed to said lock housing extending into said slot and adjacent to the rear end wall thereof when the striker bar is in its projected position,
  - (c) a compression coil spring within said slot having one end seated against said lug therewithin and its other end surrounding the centering pin and seated on the forward end wall,
  - (d) a pair of laterally projecting spaced fingers at the rear end of the striker bar rear bar extension,
  - (e) said sear member being of inverted U-shape and having its forward depending arm positioned between said spaced fingers such that in the movement of the striker bar rearwardly the forward finger will engage the sear forward arm to swing the sear upwardly so as to disengage the rear arm from the cam and in the movement of the striker bar forwardly the rear

9

finger will engage the sear forward arm to move the sear down to bring its rear arm into locking engagement with the cam.

8. The automatic bolt lock of claim 7, wherein:

- (a) said support bracket includes an upper guide wall and a lower guide wall integral with the front edge wall of the lock housing and at least one side wall thereof, 5
- (b) said lower guide wall being of a length such that its rear terminal edge will lie rearwardly of the sear front arm, 10
- (c) the underside of said lower guide wall being flat, and
- (d) the striker bar being slidably supported between the upper and lower guide walls of said support bracket. 15

9. The automatic bolt lock of claim 8, wherein:

- (a) said cam is of circle sector shape having flat oppositely inclined first and second sides at one side thereof, 20
- (b) said notch with its abutment face being at the top of the cam when held by the sear rear arm engaging said abutment face, 25
- (c) a recess having a shoulder stop formed in the cam at the bottom thereof opposite said notch,
- (d) the rear end of said link being seated in said recess,
- (e) pivot means connecting the rear end of said link to said cam, 30
- (f) a lower guide support adjacent the bottom wall of the lock housing and integral with its front edge wall and at least one side wall thereof,
- (g) said bolt lock being slidably supported between the lower guide wall of the support bracket and said lower guide support, 35
- (h) a recess in the rear part of the lock bolt on the same side as the bottom recess in the cam,
- (i) the forward end of the link being seated in said recess, and
- (j) a pivot pin means connecting said link to said lock bolt. 40

10. The automatic bolt lock of claim 9, wherein:

- (a) said shoulder stop on the cam will engage the upper edge of the link when the cam is held by the sear and the lock bolt is wholly within the lock housing to prevent rotation of the cam beyond this position as well as limiting inward movement of the lock bolt, 45

10

(b) said cam when released and rotated by the spring member to project the lock bolt outwardly of the lock housing will present its first inclined side in abutting engagement with the flat underside of the lower guide wall,

(c) said first inclined side constituting said stop means for limiting this movement of the cam,

(d) said spring member and its connection to a part of the cam and a part of the lock housing comprising:

- (a') a tension coil spring located below the cam,
- (b') a radially projecting hook on the cam to which one end of the spring is connected,
- (c') said lower guide support and the bottom end wall of the lock housing defining a pocket,
- (d') a lug in the pocket adjacent the lock housing front edge wall, and
- (e') said spring extending into said pocket with its other end secured to the lug therein.

11. The automatic bolt lock of claim 4, wherein the operative engagement of the striker bar with the front arm of the sear comprises:

- (a) a pair of laterally projecting spaced fingers at the rear end of the striker bar,
- (b) said sear member being of inverted U-shape and having its forward depending arm positioned between said spaced fingers such that in the movement of the striker bar rearwardly the forward finger will engage the sear forward arm to move the sear upwardly so as to disengage the rear arm from the cam and in movement of the striker bar forwardly the rear finger will engage the sear forward arm to move the sear down to bring its rear arm into holding engagement with the cam.

#### References Cited

##### UNITED STATES PATENTS

1,393,911	10/1921	Schumaker	-----	292—335
1,918,563	7/1933	Roedding	-----	292—335
1,992,866	2/1935	Henderson	-----	292—336 X
2,884,276	4/1959	Baptist	-----	292—336

ALBERT G. CRAIG, JR., Primary Examiner

U.S. Cl. X.R.

292—167, 335