

[54] SECURITY LOCK MEANS
[76] Inventors: Elwood W. Buck, Jr., 109 N. Almansor St., Alhambra, Calif. 91802; Ernst F. Nettmann, 1193 Kiowa Ave. Brentwood, West Los Angeles, Calif. 90025
[22] Filed: July 29, 1971
[21] Appl. No.: 167,334
[52] U.S. Cl. 292/179, 292/302, 292/DIG. 46
[51] Int. Cl. E05c 1/14
[58] Field of Search..... 292/179, 150, 255; 70/96, 97, 95, 99, 100

[56] References Cited

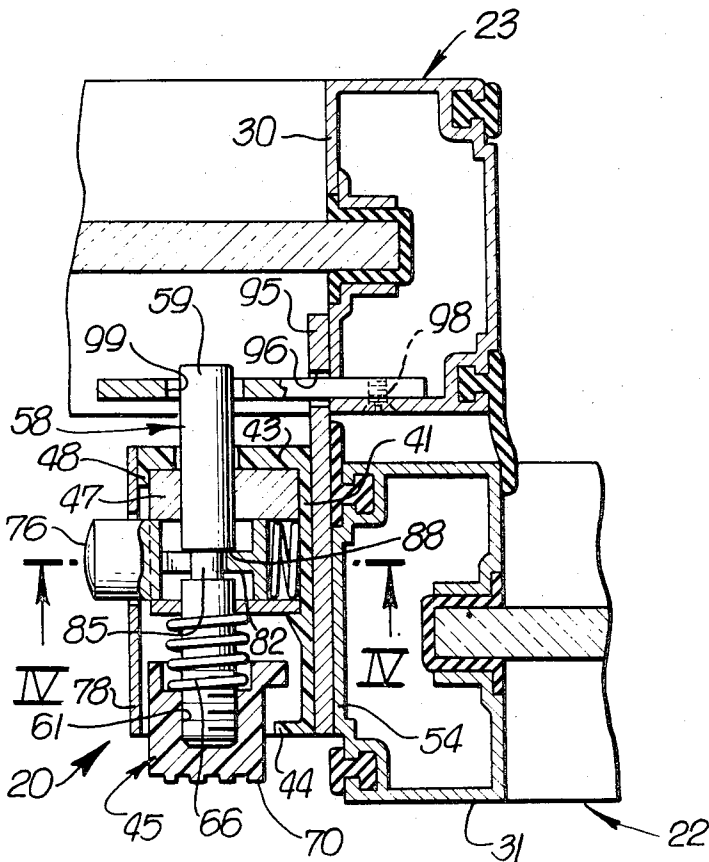
UNITED STATES PATENTS			
3,678,716	7/1972	Cobb	292/179 X
3,350,126	10/1967	Walberg et al.	292/179
570,503	11/1896	Robertson.....	292/150
1,198,509	5/1916	Anderson.....	292/179
3,082,617	3/1963	Kerman	292/179
914,065	10/1908	Newhart	292/179
1,104,707	7/1914	Rath	292/179

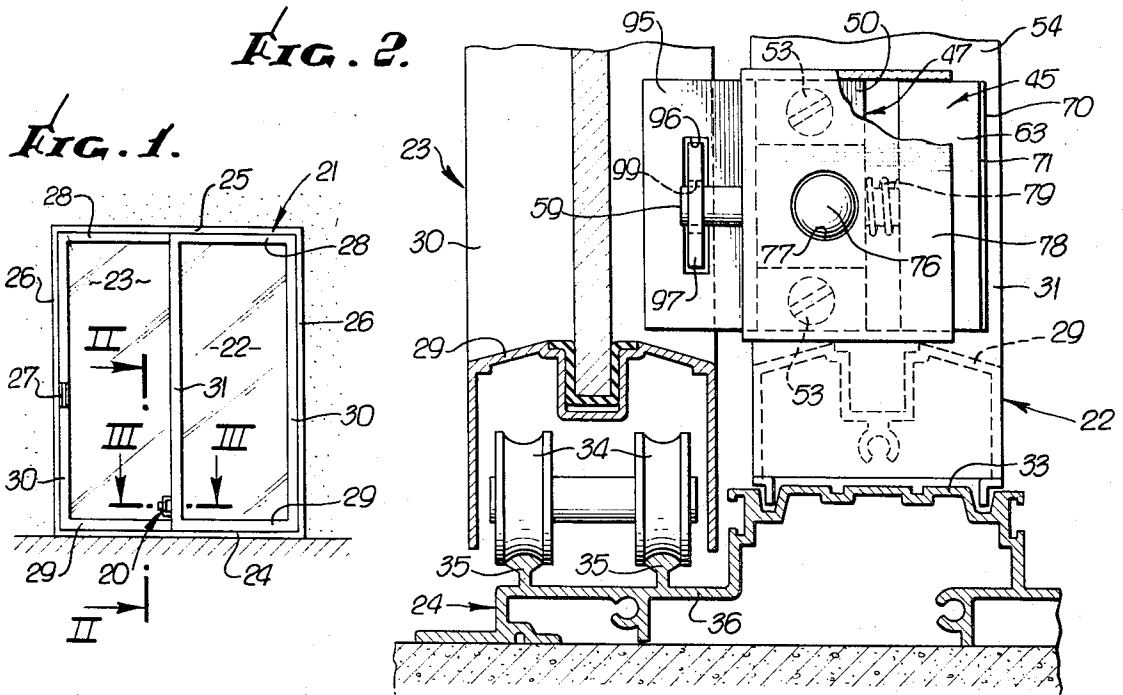
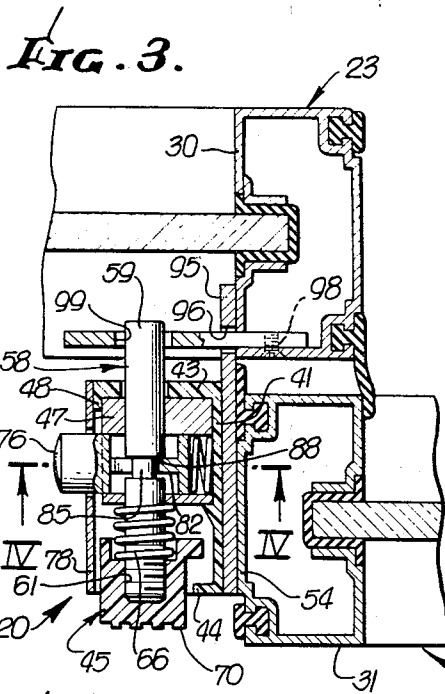
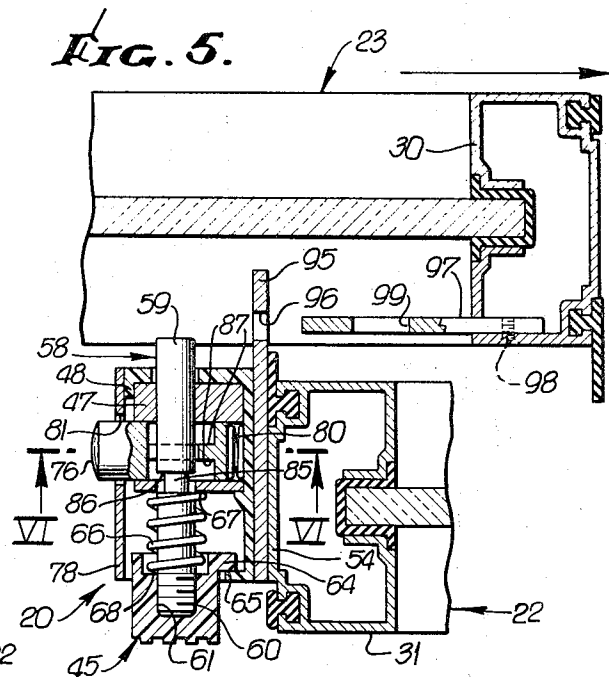
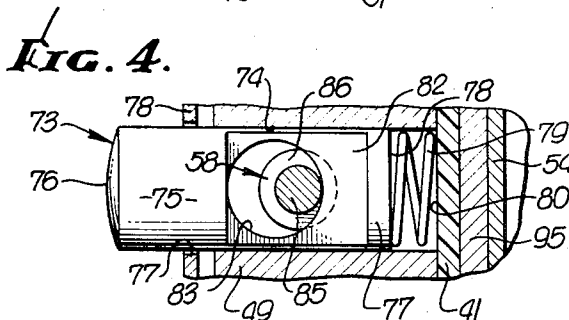
Primary Examiner—Marvin A. Champion
Assistant Examiner—William F. Pate, III
Attorney—Miketta, Glenn, Poms & Smith

[57] ABSTRACT

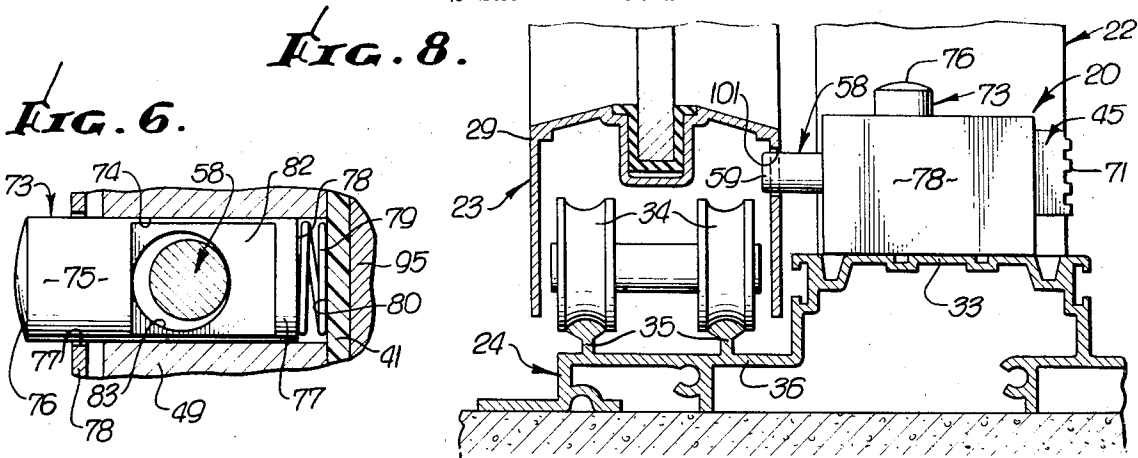
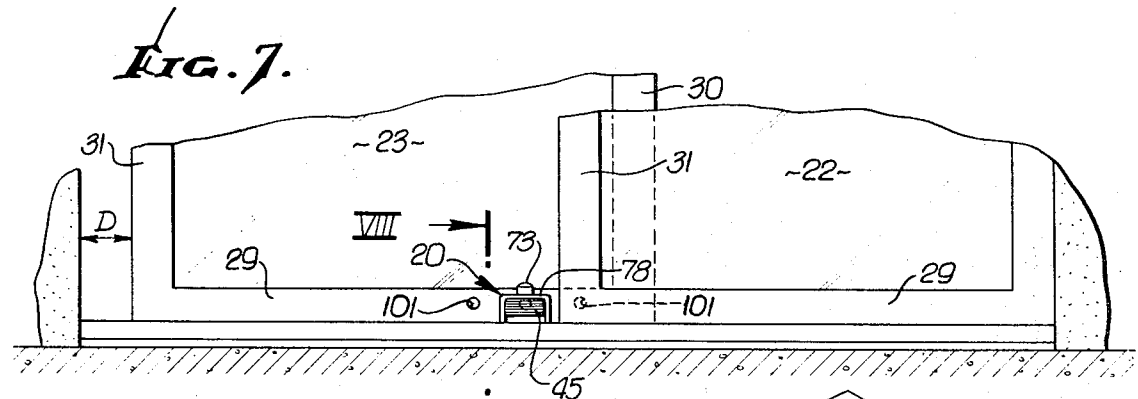
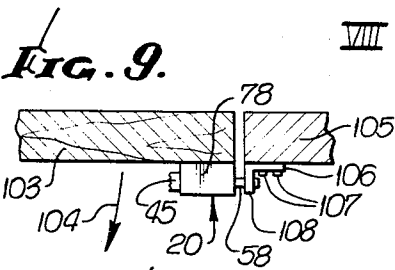
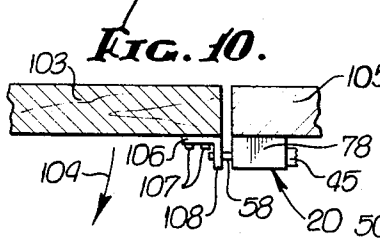
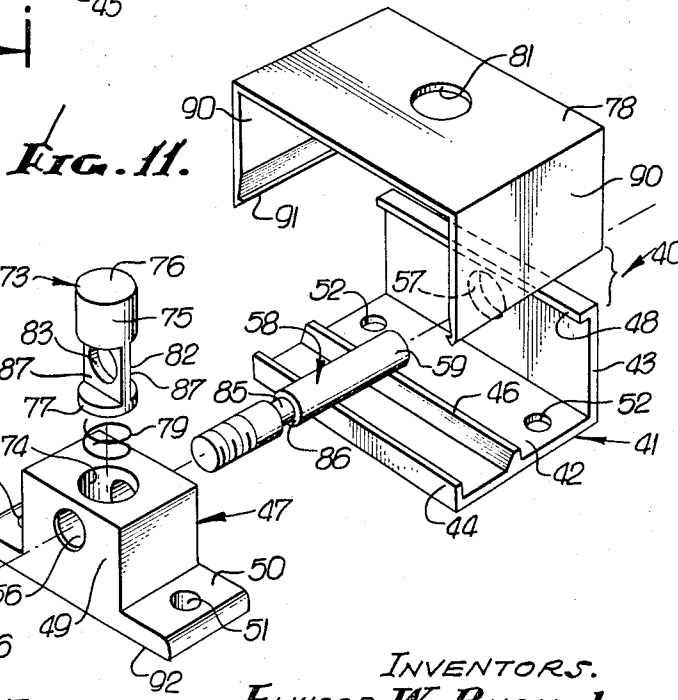
A compact secondary lock means for securement of relatively movable sliding panels or door closures and comprising a lock bolt pressure actuated into locking position with a bolt receiving opening provided on one of the relatively movable members and releasable by pressure against a release member movable along an axis normal to the axis of the lock bolt, the lock bolt being returned to retracted unlocked position by spring biasing means. The release member may be pressure actuated by either hand or foot, the lock means being readily actuated to unlocked position in the event of an emergency. A security lock means which in locked position, restrains relative movement of the members in directions such as in and out, up and down, and parallel to a door panel, and is particularly adaptable to various types of movable doors or closures such as sliding door and window constructions and swinging doors.

2 Claims, 11 Drawing Figures





INVENTORS.
ELWOOD W. BUCK, JR.
ERNST F. NETTMANN
 BY
Miketta, Gentry, Pons & Smith
 ATTORNEYS.



INVENTORS.
ELWOOD W. BUCK, JR.
ERNST F. NETTMANN
BY *Mikatta, Glenn, Pons & Smith*
ATTORNEYS.

SECURITY LOCK MEANS

BACKGROUND OF THE INVENTION

Door closure constructions which include sliding doors, panels, or windows and swinging doors are usually equipped with primary lock means actuated from either inside or outside of the door closure. Such primary lock means may be capable of being opened by an unwanted intruder using master keys or lock picking tools. To deter such intrusions secondary or secure-

ment locks have been proposed which are capable of actuation only from within the door closure building or house. Such prior proposed security locks have included manually actuated dead-bolt devices where a solid metal cylindrical bolt or shaft is slidably guidably movable in a mounting plate to insert and engage a bolt end in an opening or recess in a fixed or stationary member of the structure. Such dead-bolt locking device may be mounted on either a movable door or a fixed member. Actuation of such a secondary locking device required lifting of a handle on the bolt and then laterally sliding the bolt to retracted position or in other devices turning a knob which advanced and retracted the dead-bolt as by a ratchet means.

Furthermore, such prior proposed secondary lock constructions were not readily utilized on contemporary types of extruded or rolled metal framing and closure constructions which are used in metal sliding door and window constructions and particularly in recreational and mobile home constructions. Such prior proposed security lock means were unattractive in appearance in such contemporary installations.

SUMMARY OF INVENTION

The present invention contemplates a secondary security lock having novel construction and operation and adapted to swinging and sliding door and window constructions made of suitable material. The security lock of this invention is relatively small in size, compact, attractive in appearance, is mounted on a frame or closure member by concealed screws, and is readily adaptable to various types of installations. The security lock provides novel operation which is quick, positive, easily and readily actuated, relatively foolproof, and is operable to closed or open position by hand or by foot depending upon the installation. In a foot operated installation, the security lock of this invention provides positive unlocking of a door closure panel in an emergency or "panic" situation. The security lock of the present invention also provides positive protection against breaking and entering by an intruder to a point short of breaking the glass of the door closure. Thus this security lock restrains a door closure against universal or three-dimensional movement, namely up and down, in and out, and parallel to the plane of the door closure. The invention also contemplates various types of installations for a security lock embodying the invention, such installations including mounting the security lock on an interlocker stile of a pair of sliding doors, mounting the security lock on a sill member to provide a selection of several door open positions, and mounting of the security lock on either fixed or movable members of sliding and swinging door or closure constructions.

The present invention therefore relates to a novel secondary security lock means for use with relatively

movable members and particularly for use with sliding door and window constructions of lightweight metal structures.

An object of the invention is to disclose and provide a security lock means including a lock bolt reciprocally movable along one axis and a bolt positioning and release means movable along an axis normal to and intersecting the lock bolt axis.

Another object of the invention is to disclose and provide a security lock means having a lock bolt actuator means and a bolt positioning and release means so arranged as to be readily operable by either hand or foot.

A further object of the invention is to disclose a security lock means which is inexpensive to manufacture, readily assembled, easily installed, and made from relatively few parts.

A still further object of this invention is to disclose and provide a lock means which may be readily associated with other lock members carried by relatively movable swingable or slidable members to restrain and limit movement of the members in a plurality of directions such as in and out, up and down, and in the normal direction of movement of the members.

A further object of the invention is to provide a security lock means which may be utilized to lock a sliding door panel in one or more selected partially open positions.

Other objects and advantages of the present invention will be readily apparent from the following description of the drawings in which exemplary embodiments of the invention are shown.

IN THE DRAWINGS

FIG. 1 is a side elevational view of a sliding door construction equipped with a security lock means of this invention mounted on one of the interlockers.

FIG. 2 is an enlarged fragmentary vertical sectional view taken in the plane indicated by line II—II of FIG. 1.

FIG. 3 is an enlarged fragmentary horizontal sectional view taken in the plane indicated by line III—III of FIG. 1.

FIG. 4 is a fragmentary sectional view taken in the plane indicated by line IV—IV of FIG. 3.

FIG. 5 is a fragmentary sectional view taken in the plane of FIG. 3 and showing the sliding door of FIG. 3 in unlocked position.

FIG. 6 is a fragmentary sectional view taken in the plane indicated by line VI—VI of FIG. 5.

FIG. 7 is a fragmentary elevational view of a sliding door construction showing the security lock means of this invention mounted on a sill, the sliding door being arranged to be locked in one or more selected partially open positions.

FIG. 8 is an enlarged transverse vertical sectional view taken in the plane indicated by line VIII—VIII of FIG. 7.

FIG. 9 schematically shows a mounting of the lock of this invention on a swinging door.

FIG. 10 schematically shows a mounting of the lock of this invention on a jamb of a door frame for a swinging door.

FIG. 11 is an exploded perspective view of the lock means embodying this invention.

In the drawings, FIGS. 1-6 inclusive show a security lock means generally indicated at 20 used in a sliding

door construction of known type and manufacture. In this example a sliding door construction 21 may comprise a fixed sliding panel 22 and a movable sliding panel 23. The panels are mounted within a frame construction comprising a sill member 24, a head member 25 and jamb members 26. Movable panel 23 is provided with a door pull 27 which may include a primary lock (not shown), panel 23 being movable to the right as viewed in FIG. 1.

Each panel 22, 23 may be similarly fabricated from extruded metal frame members of suitable cross section, such panel members including top and bottom horizontal rails 28, 29 respectively, a jamb stile 30 and interlock stiles 31. In this example, fixed panel 22 is seated on a raised inward sill portion 33 and the movable panel 23 carries roller means 34 guided by tracks 35 formed on a lower sill portion 36.

Security lock means 20 is of relatively small size, compact, and dimensionally in width is approximately the width of interlock stile 31. The details of lock means 20 are best seen in FIG. 11 wherein a lock housing generally indicated at 40 includes a base plate means 41 having a base portion 42 of rectangular shape and an upstanding portion 43 integrally formed therewith along one edge of base portion 42. Base portion 42 is provided with an edge stop rib 44 for limiting outward movement of actuator member 45 as later described. An intermediate upstanding rib 46 extends parallel to rib 44 and serves to position lock body member 47 in snug relationship between intermediate rib 46 and upstanding wall portion 43. As best seen in FIGS. 3 and 5, lock body member 47 also snugly fits underneath an inwardly directed lip 48 provided on the top edge of wall portion 43.

Lock body member 47 includes a central body portion 49 from which securement lugs 50 extend in opposite directions, each lug 50 being provided with a port 51 aligned with a port 52 in base portion 41 for reception of screws 53 of suitable type for threaded engagement with edge wall 54 of interlock stile 31. Body member 47 is assembled with base plate means 41 by sliding body member 47 edgewise into the space defined by intermediate rib 46, wall 43 and lip 48 thereon.

Body member 47 is provided with a through-bore 56 extending through body portion 49 and in alignment with a port 57 in upstanding wall portion 43. A lock bolt 58 of generally cylindrical elongated shape is longitudinally reciprocally movable in bore 56 along the axis thereof. Bolt end portion 59 in normal unlocked position (FIG. 5) projects slightly beyond the exterior face of wall 43. The opposite end portion 60 of lock bolt 58 may be threaded for engagement with threads in a threaded bore 61 provided in actuator member 45.

Actuator member 45 may comprise a rectangular block 63 of approximately square cross section and having along one edge thereof a depending longitudinally extending stop portion 64, said stop portion 64 being movable in the space between ribs 44 and 46 on base portion 41 and adapted to abut as at 65 an inner surface of rib 44 to limit the retracted unlocked position of lock bolt 58. Lock bolt 58 is biased to such retracted position by a coil compression spring 66 having one end seated at 67 against a face of body portion 49 and its other end seated at 68 in a counter-bore provided in the actuator block 63. Actuator member 45 when assembled with lock bolt 58 and spring 66 projects

beyond base plate portion 41 a distance greater than the length of travel of bolt 58 from unlocked to locked position. To facilitate pressure actuation of actuator member 45 the outer surface 70 may be provided with suitable striations 71 or other suitable design to avoid slippage of the pressure finger or foot against the actuator member when the lock is operated into locked position.

A lock bolt positioning and release member 73 is reciprocally movable in a through-bore 74 provided in lock body portion 49 with the axis of through-bore 74 intersecting the axis of through-bore 56 at substantially right angles. Bolt positioning and release member 73 includes a cylindrical end portion 75 having an end pressure face 76 which projects through the port 81 in a channel shaped clip cover member 78. The opposite end of release member 73 may have a circular disc-like end portion 77 which provides a circular end face 78 against which may be seated one end of a small compression spring 79 which has its other end seated at 80 against base plate portion 41. Intermediate portion 82 of release member 73 is reduced from a circular section to a diametrical wall section having parallel sides and through which is provided an opening 83 of a diameter greater than the diameter of lock bolt 58.

Means for locking lock bolt 58 in locked position (FIG. 3) includes a reduced circular lock bolt section 85 provided between threaded end portion 60 and end portion 59, said reduced portion 85 providing an annular groove in bolt 58. The reduced section 85 has a width adapted to loosely receive the thickness of diametrical wall 82 on release member 73. The reduced section 85 provides engagement surfaces 86 cooperable with engagement surfaces 87 on diametrical wall 82 for cooperable engagement at 88 with surface 87. In operation of the lock means from retracted unlocked position to projected locked position, pressure on actuator member 45 moves lock bolt 58 longitudinally against spring 66 until reduced section 85 is positioned opposite diametrical wall 82 of the lock positioning and release member 73. At that moment, the spring 79 biases the member 73 outwardly to interlock the engagement surfaces at 88. In such locked position, the member 73 projects beyond the port 77 a distance equivalent to the length of travel of the member 73 permitted by the depth of the reduced section 85 and the enlarged opening 83 in the diametrical wall 82. Upon application of release pressure by a hand or foot against the pressure face 76 of member 73, spring 79 is compressed, the engagement faces 87, 86 are disengaged and immediately upon such disengagement the lock bolt is moved into unlocked position by spring 66.

Housing means 40 includes cover 78 which is applied to the lock means after the base plate means 41 has been secured to the selected frame member as by the screws 53. Screw heads 53 are readily accessible with cover 78 removed. Cover 78 includes sidewalls 90, each of which is provided with an inwardly directed edge portion 91 of triangular section for engagement with the bottom edge margins 92 of the securement lugs 50 of the lock body member 47, the edge margins 92 projecting just slightly beyond the edge faces of the base plate portion 42. Thus, cover 78 may be readily snapped into assembled relationship with the remainder of the lock means after installation on a selected frame member.

In the exemplary illustration of FIG. 1, it is desirable that the movable panel 23 be locked against movement vertically, horizontally in the plane of the sliding doors, and also against in and out movement. In such installation a keeper member 95 of rectangular flat stock may be secured between base plate 41 and edge wall 54 of the interlock stile by the screw means 53 (FIGS. 3 and 5). Keeper member 53 has a length sufficient to extend into overlying relationship with the horizontal rail 29 of the sliding panel and may be provided with a vertically disposed keeper slot 96. Interlock stile 31 of the sliding panel may be provided with a tongue 97 secured by suitable screw means to the interlock stile 31 at 98. Tongue member 97 projects away from stile 31 for passage through opening 96 and keeper member 95 until tongue opening 99 is disposed opposite lock bolt 58. In this position, the sliding panel is in closed locked condition with respect to the primary lock at handle 27 and the interlocks are in weather sealing relationship as indicated in FIG. 3. Upon actuation of the security lock means, lock bolt 58 will be projected into tongue opening 99 to restrain sliding movement of the door panel 23 in the plane of the door. Vertical or up and down movement of the sliding panel 23 relative to fixed panel 22 which might occur during an attempt to lift panel 23 upwardly and then remove the panel by sliding it outwardly or inwardly and then downwardly, is restrained by the lock bolt 58 and also by the interengagement of the keeper member 95 with tongue member 97. In and out movement of panel 23 relative to the fixed panel 22 is restrained by the interlocking engagement of tongue 97 with keeper member 95. Thus, any movement of panel 23 relative to the fixed panel 22 or the door frame construction is resisted by the lock means 20 and its interengagement with the tongue member 97 and the use of a keeper member 95.

In the example of FIG. 1, lock means 20 is located near the bottom of interlock stile 31. In this position, actuator member 45 is readily operable by pushing in a direction toward the movable panel 23. Likewise, release of the locking device is easily accomplished by pressing sidewardly against the lock positioning and release member 73, such pressure being resisted by the fixed panel 22. Since the biasing spring 79 of the lock release member is relatively light in strength or requires only a few pounds pressure for depression of release member 73, it will be apparent that the release member may be actuated by pressure of a foot. It should also be noted that the actuator member 45 and release member 73 are located on contiguous faces of the housing 40 so that they are readily accessible and capable of positive action.

In FIGS. 7 and 8, lock means 20 is installed in a different manner so that the sliding panel 23 may be selectively opened to one or more positions at which the panel may be locked against further sliding movement in the plane of the door. It will be apparent that vertical up and down movement is also restrained in such installation.

In this installation of lock means 20, bottom rail 29 of sliding panel 23 is provided with one or more bolt receiving openings 101. Openings 101 are selectively spaced in a line passing through the axis of lock bolt 58. Thus, as shown in FIG. 7, when sliding panel 23 is opened a selected amount indicated by the space D, lock bolt 58 may be engaged with an intermediate opening 101 in horizontal rail 29. The lock means is op-

erable in a manner similar to that described above and may be readily secured to the sill member in the same manner as it was secured to the interlock stile.

The above examples of installations of lock means 20 have illustrated the lock used on a pair of relatively movable sliding panels. The lock means 20 is readily adapted to swinging or hinged door constructions as shown schematically in FIGS. 9 and 10. In FIG. 9, a swinging door member 103 may be hinged in well known manner for movement into open position in the direction indicated by arrow 104. Lock means 20 may be mounted on one edge of the door at a suitable height by securement screws which extend into the swinging door. Along jamb member 105 of the door frame may be mounted an angle lock member 106 secured as by screws 107 to the jamb member and having a ported leg 108 for reception of lock bolt 58 to provide a dead bolt type lock arrangement.

In FIG. 10, the lock means 20 may be mounted on the jamb member 105 and the ported angle lock member 106 secured to the swinging door 103. It will be apparent that the dead bolt arrangement may be installed in either fashion with the same effectiveness.

The construction and fabrication of the several parts of lock means 20 readily adapts to production line methods of making each part and also of assembly of the lock means. The base plate means 41 may be extruded from selected material such as an aluminum alloy and an extruded member may then be cut to selected lengths to form base plate 41. Lock body member may be formed in various ways as by casting with the lock bolt and release member through-bores formed therein. Lock bolt 58 requires only the reduced section at 85 and threading of one end portion. Actuator member 45 may also be cut to length from an extruded stock member and then provided with the tapped threaded bore.

Assembly of lock means 20 is readily accomplished by placing body member 49 on base plate portion 42, inserting spring 79 at the bottom of release member bore 74, pressing release member 73 downwardly against the spring to permit lock bolt 59 to be inserted through wall port 57, release member port 83 and then ensleeved with spring 66 and then threaded into actuator member 45. When the threads are fully tightened, actuator member 45 lies within the housing 40 and cover member 78 may be snapped into place over the above assembly. Thus, the various parts are held in interlocked assembly. Upon installation, cover member 78 is removed, securement screws are passed through lugs 50 and base plate portion 42 for securement to a frame member.

It will be readily understood that various modifications and changes may be made in the spring strengths employed, overall dimensional size of the lock housing and materials from which the various parts are made. All such arrangements and modifications coming within the scope of the appended claims are embraced thereby.

We claim:

1. A security lock means comprising, in combination: a base plate means; a lock body member on said base plate means; a lock bolt carried by said body member for reciprocal movement in a locking and unlocking direction along one axis;

7

a bolt positioning and release means carried by said body member for interengagement with said bolt and movable along an axis intersecting the axis of the lock bolt;
 an actuator means connected with said lock bolt and movable in the direction of said one axis;
 a keeper member seated against said base plate means,
 said keeper member having a keeper opening adjacent the end of said lock bolt in projected locked position.
 2. In a security lock means for a closure construction including members movable relative to each other and into adjacent closed relation, the combination thereof with of:
 means on one of said members providing a bolt receiving opening;
 a lock means carried on the other of said members and comprising:
 a base plate and a lock body member thereon adapted to be secured to said other member,

8

said base plate and lock body member having an aligned bolt port and bolt through bore respectively,
 a lock bolt longitudinally movable in said bore and port,
 a bolt positioning and release member carried by said body member, for movement in a direction normal to said lock bolt and having an opening receiving said lock bolt,
 engagement means on said bolt positioning and release member cooperable with engagement means on said lock bolt for holding said bolt in locked position,
 a lock bolt actuator means connected with said lock bolt;
 and a keeper member having a keeper portion extending parallel to said lock bolt and having a keeper opening adjacent the end of said lock bolt in projected locked position.

* * * * *

25

30

35

40

45

50

55

60

65