United States Patent [19]

Zeit

[11] **3,869,887**

[45] **Mar. 11, 1975**

[54] **SURFACE MOUNTED LOCK UNIT FOR SLIDING DOORS**

[76] Inventor: **Harry Zeit,** 20255 N.W. Sixth Ave., Miami, Fla. 33169

[22] Filed: **May 30, 1973**

[21] Appl. No.: **365,144**

[52] **U.S. Cl.** **70/100,** 70/451, 292/145, 292/DIG. 53

[51] **Int. Cl.** **E05b 65/08**

[58] **Field of Search** ..... 70/90, 99, 100, 451; 292/42, 145, 147, 148, 149, 150, 151, 152, 153, 154, 155, 162, 175, 288, 289, 292, DIG. 20, DIG. 33, DIG. 46, DIG. 47, DIG. 53; 49/449, 450, 451

[56] **References Cited**

UNITED STATES PATENTS

981,972	1/1911	Bonness	292/DIG. 47
1,203,986	11/1916	Curnow	292/288 UX
1,336,242	4/1920	Larson	292/DIG. 20
1,587,771	6/1926	Goddard	292/DIG. 33
1,900,936	3/1933	Huttger	292/DIG. 33
3,347,585	10/1967	Chmura	292/294
3,428,349	2/1969	Shelton	292/288
3,490,802	1/1970	Zeit	292/DIG. 46
3,521,922	7/1970	Bowling	292/145

Primary Examiner—Albert G. Craig, Jr.
Attorney, Agent, or Firm—Clarence A. O'Brien; Harvey B. Jacobson

[57] **ABSTRACT**

A lock device adapted to be mounted on the fin of a track in which closure panels are slidably mounted. The lock device comprises a block having a planar face, means for mounting the block on the fin with the planar face adjacent one side of the fin, a guide bore in the block substantially perpendicular to the planar face and a lock pin slidable in the bore into engagement with the panel. The block is mounted on one side of the fin by connecting means which extend through mounting bores in the block and apertures in the fin and threadably engage apertures in a fin reinforcing plate adjacent the other side of the fin.

15 Claims, 5 Drawing Figures

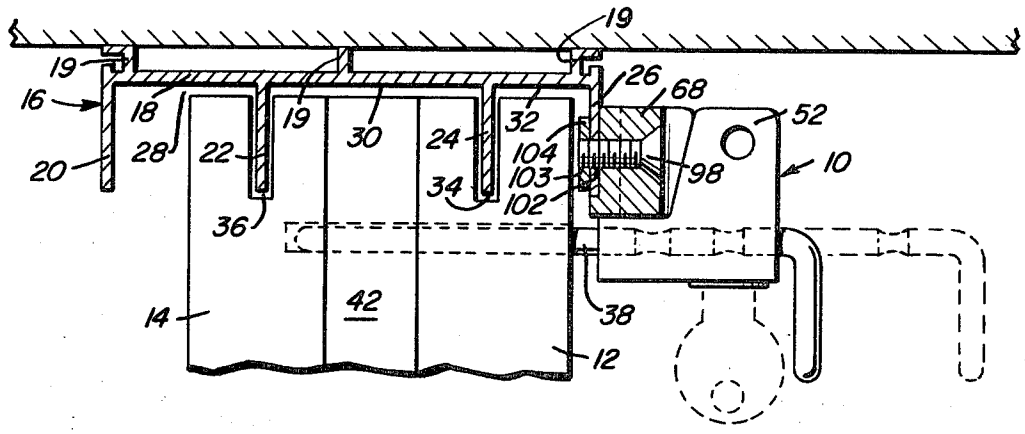


Fig. 1

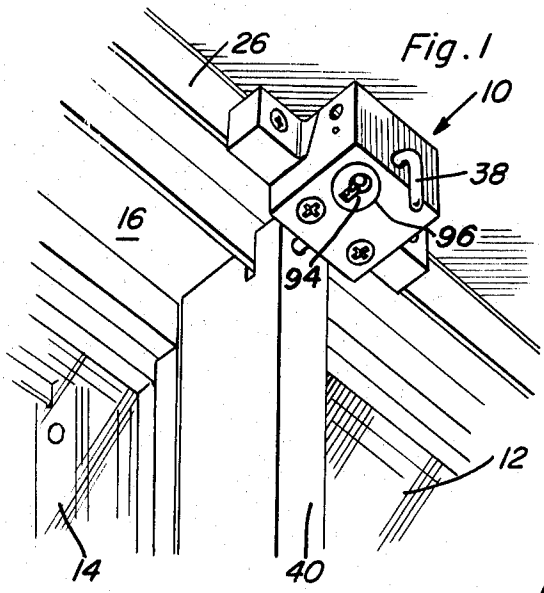


Fig. 2

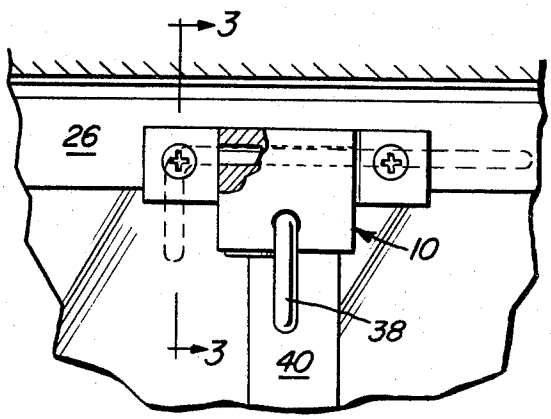


Fig. 3

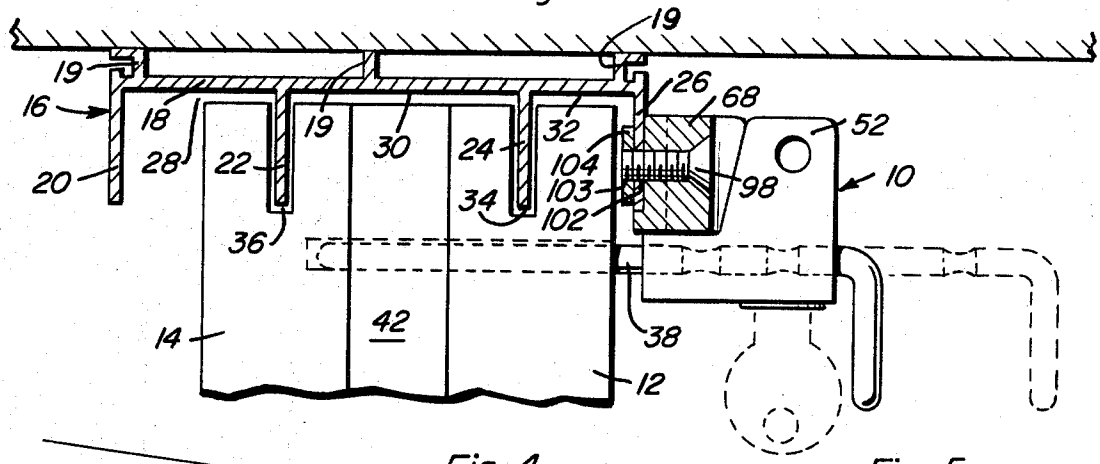


Fig. 4

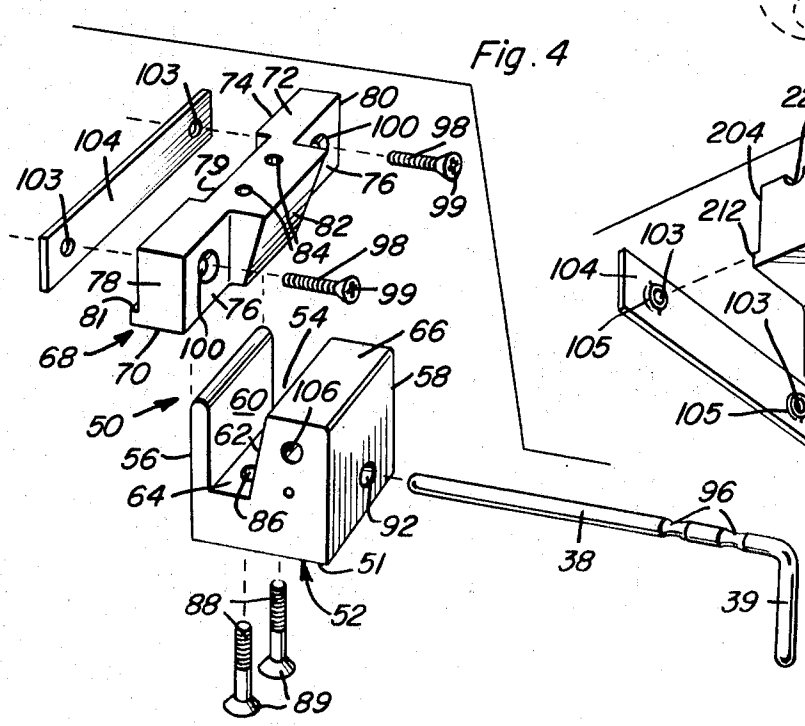
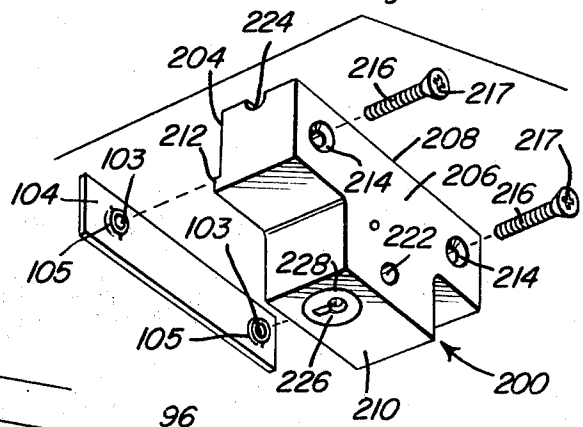


Fig. 5



SURFACE MOUNTED LOCK UNIT FOR SLIDING DOORS

The present invention relates to locking devices for sliding closure panels, such as windows and doors.

Various types of locking devices for sliding closure panels, such as windows and doors, have been suggested over the years. Perhaps the simplest device is a rod or bar which may be pivotally mounted on the door frame or inserted in the track between the frame and the adjacent stile of the sliding panel. Another popular device is a blocking element which is removably fixed within the panel track to obstruct the passage of the panel. Still another form of locking device comprises a block mounted on the track having a guide bore therein through which a lock pin extends into engagement with the sliding panel. This latter type of locking device suffers from the disadvantage that in order to mount it on the track a portion of the block necessarily extends into the track channel in which the panel slides. Thus, this type of device has only been useful with panels which provide a relatively large, for example at least about 3/16 inch, clearance between the track mounting fin and the panel.

It is, therefore, an object of this invention to provide a locking device of the lock pin type which is useful with sliding panels which provide less than about a 3/16 inch clearance between track mounting fin and sliding panel.

It is another object of this invention to provide a locking device which mounts securely on the track fin.

It is still another object of this invention to provide an effective lock for sliding panels capable of being easily and rapidly installed by any person without any particular skill or effort.

Briefly stated, in accordance with the aforesaid objects, the present invention provides a locking device adapted to be fastened to a fin associated with a track that slidably mounts one or more sliding closure panels. The device is preferably mounted on an outside fin and includes a thin reinforcing plate as the only member within the track channel. When mounted in this fashion, the locking device of the present invention is suitable for use with panels which present as little as about 1/16 inch clearance between the mounting fin and the sliding panel.

The invention will be better understood from the following description taken in conjunction with the accompanying drawings:

FIG. **1** is a perspective view of one form of the lock device of the present invention mounted in place on a track fin.

FIG. **2** is a front elevational view showing the device in locked position and showing, in phantom, the storage position of the locking pin.

FIG. **3** is a sectional view taken substantially along line **3**—**3** in FIG. **2**.

FIG. **4** is an exploded view of one embodiment of the locking device.

FIG. **5** is an exploded view of another embodiment of the locking device of the present invention.

Referring now to the drawings, it will be observed from FIGS. **1** and **3** that the lock device, generally designated by the numeral **10**, is associated with a pair of closure panels **12** and **14**, here shown as sliding doors, but which may also take the form of windows and the like, framed with stiles and rails in the conventional

manner, adapted to be mounted in parallel spaced relation to each other by means of a track member **16**. As is well known, either one or both of panels **12**, **14** can be slidable in the track member. For purposes of simplicity herein, however, it will be assumed that panel **12** is the sliding panel and is disposed on the inside of the fixed panel **14**, i.e. FIG. **1** illustrates the closure panels from the inside of the room.

Generally, the closure panels are mounted in a rectangularly framed door or window opening which includes a top track member **16** and a bottom track member (not shown). One form of conventional track member **16** is shown in FIG. **3** and includes a web member **18**, means **19** to mount the web to and/or space the web from a support, and four depending perpendicular flanges or fins **20**, **22**, **24** and **26**. Fins **20** and **26**, respectively, adjacent the outside and inside of the room in which the track and panels are mounted are external fins. Internal spaced guide fins **22** and **24** define with fins **20** and **26** channels **28**, **30** and **32**. Fins **22** and **24** are denominated "guide" fins because when received in recesses **34** and **36** in closure panels **12** and **14**, respectively, they guide the slidable relative movement of the panels in parallel spaced relation to each other.

Sliding panels and guide tracks of the types herein described are well known and form no part of the present invention.

In accordance with the present invention, lock device **10** may be mounted on the sides of external fins **20** and **26** remote from channels **28** and **32**, respectively. Most conveniently, lock device **10** is mounted within the room on fin **26** as shown in FIGS. **1** and **3**. Lock pin **38** extends through lock device **10** and is preferably received within apertures formed in at least one of the stiles **40** of the closure panel frame to prevent slidable movement of the panel. As shown in FIG. **3**, the lock pin may be sufficiently long to extend into and engage the stile of the other closure panel frame, as well as into the stile of a screen or other door **42** interposed between panels **12** and **14**. It will be appreciated that lock device **10** can be mounted on fin **26** in alignment with either stile of the closure panel frame.

The lock device designated generally as **50** in the embodiment of FIG. **4** includes a generally rectangular block or body **52** formed with a slot **54** intermediate block end walls **56** and **58**. Slot **54** has a vertical wall **60**, a vertically inclined wall **62** and a horizontal floor **64**. The walls of the slot extend downwardly from the horizontal top surface **66** of the block a depth sufficient to receive the track mounting member **68** therein with the bottom surface **70** of the member **68** seated upon floor **64** and the top surface **72** of the member **68** substantially coplanar with the top surface **66** of the block. Track mounting member **68** is generally rectangular in cross-section and includes generally parallel faces **74** and **76** joined by generally parallel ends **78** and **80** and top and bottom surfaces **70** and **72**. Face **74** has formed centrally therein and extending between surfaces **70** and **72** a shallow rectangular recess **79** to receive the portion of the block between end wall **56** and wall **60** with end wall **56** substantially coplanar with face **74**. A shoulder **81** may optionally be formed along the lower marginal portion of face **74** for seating the bottom edge of the mounting fin **26** thereon with the fin side adjacent coplanar face **74** of the member and wall **56** of the block. Face **76** has a centrally disposed wedge element **82** extending vertically between surfaces **70** and **72**

formed therein to firmly secure member **68** in slot **54.**

The wedge element portion of the member **68** is provided with a pair of vertical internally threaded bores **84,** as shown in FIG. **4,** which are in vertical registry with a pair of bores **86** in the floor **64** of the block. The threaded portion of positioning screw members **88** extend through bores **86** and threadably engage bores **84** with the heads **89** of the screw members engageable with the bottom **51** of the block. These heads may, if preferred, be flat heads engageable in recesses countersunk into the block. It will be appreciated that block **52** and member **68** may be firmly clamped together by rotating screw members **88** with a screw driver to threadably draw the wedging element of member **68** into slot **54.**

Also formed within the block **52** in perpendicular relation to end walls **56** and **58** and in parallel spaced relation to and below floor **64** is a guide bore **92** through which lock pin **38** extends into engagement with a sliding panel stile. The lock pin is provided at one end with a right angle portion **39** to engage wall **58** and limit the projection of the pin into bore **92.** Thus, the lock pin **38** may be inserted into the guide bore from one side **58** so as to project from the other side **56** into engagement with the panel frame for locking the same.

Optionally, the lock pin may be locked in place in guide bore **92** by a conventional key lock means, shown most clearly in FIG. **1.** In one form of the invention a lock cylinder **94** is received in a recess **96** formed in the bottom **51** of block **52.** In conventional manner, operation of a key in cylinder **94** rotates cam means (not shown) on the cylinder into locking engagement with reduced diameter portions **96** on the pin **38** through an aperture (not shown) communicating the recess **96** with the guide bore **92.**

In one installation of the lock device of FIG. **4,** shown in FIG. **3,** member **68** is mounted to the side of fin **26** remote from channel **32** by screw members **98.** Member **68** is provided with a pair of bores **100** which are in registry with apertures **102** in the fin. The screw members **98** project through the bores **100** and apertures **102** and threadably engage threaded apertures **103** in reinforcing plate **104** disposed adjacent the channel side of fin **26.** The number of screw engaging threads in the plate apertures may be increased by providing internally threaded flanges **105,** as shown in FIG. **5,** extending from the periphery of the apertures **103** into the apertures **102** in fin **26.** The screw members **98** are of appropriate length that they extend into but do not project out of the apertures **103** in the plate **104** into the channel. As shown, the heads **99** of the screw members are engageable with the face **76** of the member. These heads may, if preferred, be flat heads engageable in recesses countersunk into the member.

The plate **103** is preferably made of 1/16 inch or thinner flat stock and permits the lock device **50** of the present invention to be mounted for use in connection with closures which have only minimal clearance between the sliding panels and the mounting fin. Once the lock device **10** is in position, the guide bore **92** may be used to guide a drill bit so as to form a hole in the stile (or stiles) into which the lock pin **38** may be received. It will be appreciated that by adjusting the location of the lock device relative to the sliding panel, the panel may be locked in either closed or slightly open positions. When the lock device is unlocked, lock pin **38** may be stored in storage bore **106** extending through the block between and in parallel spaced relation to walls **58** and **62.**

In another embodiment of the invention, illustrated in FIG. **5,** the lock device is designated generally by the numeral **200.** The device includes a generally T-shaped block having T-shaped faces **204** and **206,** substantially horizontal flat top surface **208** and a substantially horizontal flat bottom surface **210.** A shoulder **212** may optionally be formed along the lower edge of the horizontal portion of the T of face **204** for seating mounting fin **26** thereon with the horizontal portion of the T of face **204** adjacent and in contact with the side of fin **26** remote from channel **32.** Block **202** is mounted to fin **26** in much the same manner as member **68** of FIG. **4** is mounted to the fin. The horizontal portion of the T is provided with a pair of bores **214** as shown in FIG. **5** which are in horizontal registry with a pair of apertures **102** in fin **26.** Screw members **216** are of such length that they extend through bores **214** and apertures **102** in the fin and threadably engage threaded apertures **102** in reinforcing plate **104** disposed adjacent the channel side of fin **26.** The number of screw engaging threads in the plate may be increased by providing internally threaded flanges **105** extending from the periphery of the apertures **103** on the face of plate **104** in contact with fin **26.** The threaded flanges extend into and fit closely within the apertures in fin **26.** As previously indicated in connection with FIG. **4,** the plate is of thin flat stock to permit use on sliding closures where the clearance between the sliding panel and the mounting fin is small. As shown, the heads **217** of the screw members engage the face **206** of the block. These heads, if preferred, may be flat heads engageable in recesses countersunk into the block. A guide bore **222** is formed in the vertical portion of the T block between faces **204** and **206** adjacent the bottom surface **210** and in parallel spaced relation thereto for receiving a lock pin **38** therethrough. Optionally, the lock pin may be held in place in the bore by a conventional key lock means as shown in FIG. **5.** Specifically a lock cylinder **226** is received in a recess **228** formed in the bottom surface **210** of the block. In conventional manner, operation of a key in cylinder **226** rotates cam means (not shown) on the cylinder into locking engagement with reduced diameter portions **96** on the pin **38** through an aperture (not shown) communicating the recess **228** with the guide bore **222.** For use when lock device **200** is unlocked a hemispherical groove **224** is formed in top surface **208** for storage of lock pin **38.**

While the present invention has been described with reference to particular embodiments thereof, it will be understood that numerous modifications can be made by those skilled in the art without actually departing from the scope of the invention. Accordingly, all modifications and equivalents may be resorted to which fall within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In combination with a track and at least one closure panel slidably mounted therein, said track including at least two parallel spaced fins for guiding sliding movement of said panel, a lock device adapted to be mounted on one of said fins, said lock device comprising:

a. a block having at least one planar face;

b. means for mounting said block on one of said fins with said planar face adjacent one side of said mounting fin;

c. a guide bore in said block substantially perpendicular to said planar face; and

d. a lock pin slidable in said bore into engagement with said panel;

e. said means for mounting said block including at least one mounting bore in said block communicating with and perpendicular to said planar face, connecting means extending through said mounting bore and said fin, and plate means adjacent the side of said fin remote from said block in engagement with said connecting means, said plate means including two flat, spaced apart parallel faces, the distance between said faces being less than the distance between said mounting fin and said sliding panel, and said connecting means terminating within said plate means.

2. A device, as claimed in claim **1,** wherein said connecting means comprises an element having a threaded shank and a head at one end of said shank and said plate means threadably engages said threaded shank.

3. A device, as claimed in claim **2,** wherein said plate means includes a threaded aperture for engaging said threaded shank and said threaded shank terminates within said aperture.

4. A device, as claimed in claim **3,** wherein said mounting fin has an aperture therein for receiving said connecting means, said plate aperture has a peripheral flange thereabout extending outwardly from one face of said plate means and adapted to be received within said fin aperture, and said flange is internally threaded.

5. In combination with a track and at least one closure panel slidably mounted therein, said track including at least two parallel spaced fins for guiding sliding movement of said panel, a lock device adapted to be mounted on one of said fins, said lock device comprising:

a. a block including a first element having a slot formed therein for receiving a second element in said slot, means for rigidly joining said first and second elements, said second element including a planar face adapted for mounting adjacent one side of said mounting fin;

b. means for mounting said block on one of said fins with said planar face adjacent one side of said mounting fin;

c. a guide bore in said block substantially perpendicular to said planar face; and

d. a lock pin slidable in said bore into engagement with said panel;

e. said means for mounting said block including at least two spaced apart parallel mounting bores in said block communicating with and perpendicular to said planar face, at least two connecting means extending through said mounting bores and said fin, and plate means adjacent the side of said fin remote from said block in engagement with said connecting means, said connecting means comprising an element having a threaded shank and a head at one end of said shank, said plate means comprising two flat, spaced apart parallel faces and including a threaded aperture for engaging said threaded shank, said shank terminating within said aperture, the distance between said faces being less than the distance between said mounting fin and said sliding panel.

6. A device, as claimed in claim **5,** wherein said slot includes a vertically inclined wall and said second element includes a wedge element having a vertical inclination corresponding to the inclination of said wall.

7. A device, as claimed in claim **6,** wherein said threaded shank terminates within said plate means.

8. A device, as claimed in claim **7,** wherein said block includes two spaced apart parallel mounting bores, said connecting means comprises two elements, and said plate means includes two threaded apertures for engaging said threaded shanks.

9. A device, as claimed in claim **6,** further including a bore through said first element in generally parallel relation to the longitudinal extent of said fin for receiving and storing said lock pin when said device is unlocked.

10. A device, as claimed in claim **6,** wherein said guide bore extends through said first element and said first element includes key lock means therein communicating with said guide bore for locking said lock pin in said guide bore.

11. A device, as claimed in claim **6,** further including a shoulder projecting outwardly from the lower marginal edge of the face of said second element adapted for mounting adjacent and underlying the lower margin of said fin, said shoulder extending in generally parallel relation to the length of said fin.

12. A device, as claimed in claim **1,** wherein said block includes two parallel spaced apart T-shaped faces, one of said faces adapted for mounting adjacent one side of said mounting fin, said guide bore communicates with and extends perpendicular to said T-shaped faces, the horizontal portion of said T-shaped faces includes two spaced apart parallel mounting bores communicating with and extending perpendicular thereto and two connecting means for engaging said plate means.

13. A device, as claimed in claim **12,** further including key lock means in said block communicating with said guide bore for locking said lock pin in said guide bore.

14. A device, as claimed in claim **12,** further including a recess in the top of said block in generally parallel relation to said fin for receiving and storing said lock pin when said device is unlocked.

15. A device, as claimed in claim **12,** further including a shoulder projecting outwardly from the lower margin of the horizontal portion of the T-shaped face adapted for mounting adjacent said fin, said shoulder extending in generally parallel relation to the length of said fin.

* * * * *