United States Patent [19]

Sorensen

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[54] **LOCK FOR SLIDING DOORS**

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

[58] **Field of Search** 70/90, 100, 129, 154; 292/150; 49/449, 450

[56] **References Cited**

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[57] **ABSTRACT**

A lock for sliding doors that is adapted to be easily installed on the lower left, lower right, upper left or upper right-hand corner of the sliding door. The lock prevents the sliding door from being moved in a horizontal or vertical position. The lock includes a housing with a movable plunger mounted therein which has a retracted and locking position. Locking means within the housing lock the plunger in its locking position. Key actuated means activate the locking means to release the plunger so that the plunger may be moved from its locking position to its retracted position.

3 Claims, 4 Drawing Figures

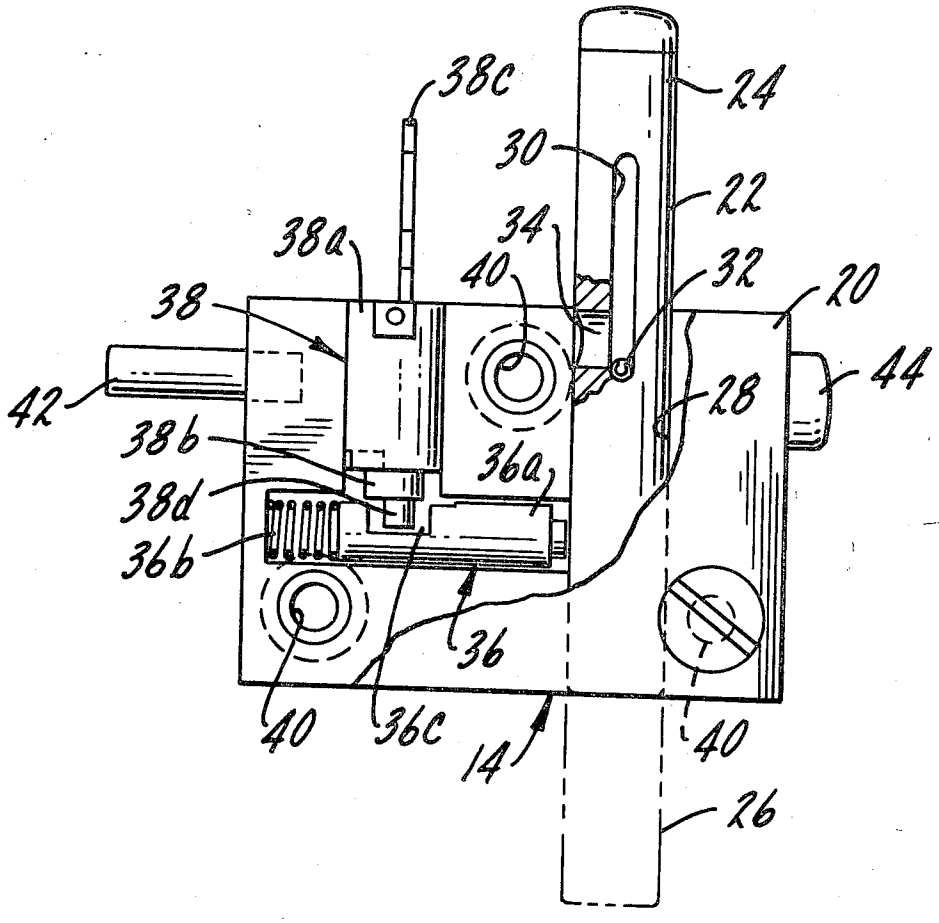


fig. 1.

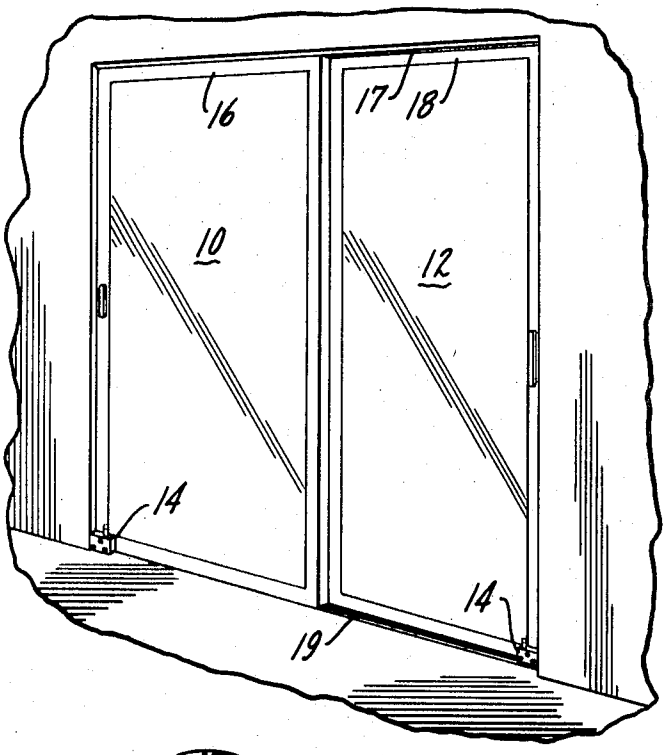


fig. 2.

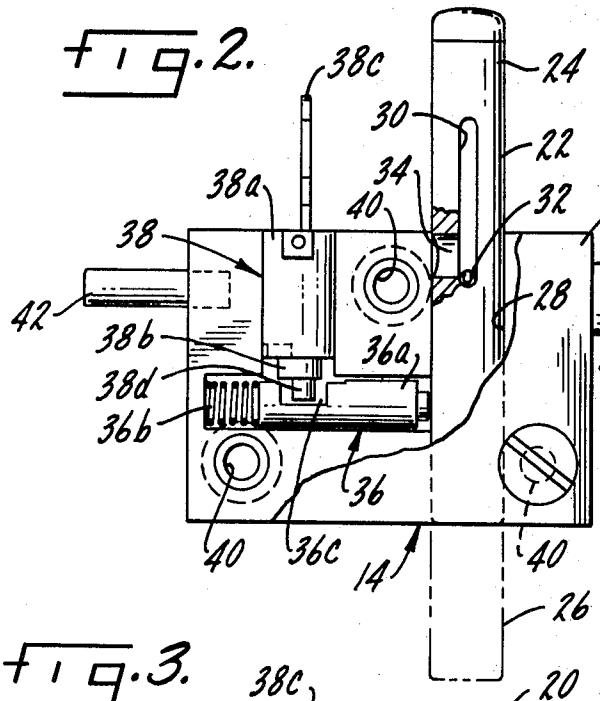


fig. 4.

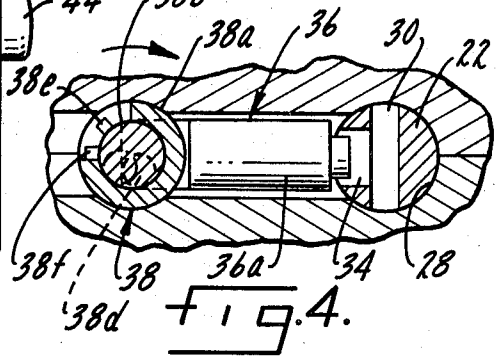
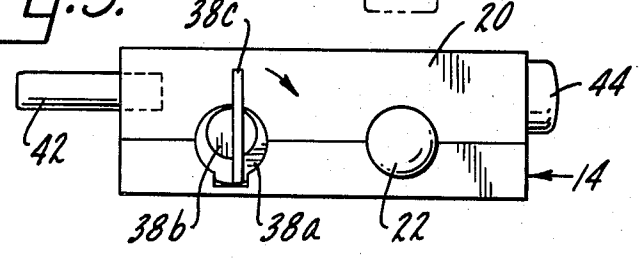


fig. 3.



LOCK FOR SLIDING DOORS

This invention relates to a lock for sliding doors used, for example, as a doorway between the interior and exterior of a home.

Sliding doors are often used in homes to provide access between the interior of the home and an exterior porch or patio. Such sliding doors are frequently the most vulnerable point of entry into the home by burglars, because the sliding doors do not have locks or the locks provided are inadequate and may be easily opened.

It is an object of the present invention to provide a lock for sliding doors which is easily installed, reduces the chances of entry through the sliding doors and may be used in different places on the sliding doors.

The lock of the present invention is adapted for use with sliding doors and is adapted to be easily installed upon the sliding door in a variety of positions. For example, the lock may be put on the lower left, lower right, upper left or upper right-hand corner of the sliding door, depending upon the position of the sliding door in its frame and whether there is a second sliding door used therewith.

Other objects, features and advantages of the present invention will be apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

FIG. 1 is a perspective view of a pair of sliding doors utilizing locks of the present invention;

FIG. 2 is an elevational view, partially in section, of the lock shown in FIG. 1;

FIG. 3 is a top view of the lock shown in FIG. 1; and

FIG. 4 is a partial cross-sectional view of the lock shown in FIG. 1 when the lock is in its locked position.

Referring now to the drawings, and particularly to FIG. 1, there is illustrated two sliding doors **10** and **12** which each have a lock embodying the features of the present invention and indicated generally by reference number **14.** The sliding doors **10** and **12** are, for exemplary purposes only, conventional glass doors which include a frame **16** and **18,** respectively, which slides in upper and lower tracks **17** and **19,** respectively. A lock **14** is secured to the inside lower left-hand corner of the frame **16** and another lock **14** is secured to the inside lower right-hand corner of the frame **18.** The lock **14** permits the doors **10** or **12,** or both, to be locked when they are closed. When locked doors **10** and **12** cannot be opened nor can they be lifted upwardly out of their track **19,** which is a method frequently used to remove a sliding door and gain access to the home.

Referring now to FIGS. **2, 3** and **4,** the lock **14** will be discussed in greater detail. The lock **14** includes a housing **20** in which is mounted a vertically movable plunger **22.** The plunger **22** has an actuation end **24** and a locking end **26.** The actuation end **24** is pushed by hand to move the plunger **22** so that the locking end **26** extends into a hole (not shown) in the frame, floor, track or the like, below the lock **14.** The position of the hole is dependent, of course, upon the position of the lock when the sliding door has been closed and in the position in which it is to be locked.

The plunger **22** is slideably mounted in a vertical passageway **28** extending through the housing **20.** The plunger **22** has a slot **30** through which a fixed pin **32**

extends. The pin and slot arrangement guides the plunger **22** and stops it when it has been pushed downwardly so that the locking end **26** is in the hole and the plunger **22** is in its locked position, as shown in dotted lines in FIG. **2.**

The plunger **22** has a groove **34** in its side into which a spring-biased locking means, indicated generally by reference number **36,** extends (see FIG. **4**) when the plunger **22** is pushed downwardly into its locked position. The locking means **36** holds the plunger **22** in its locking position until it is released by turning a key-actuated cam means indicated generally by reference numeral **38.** The locking means **36** comprises a movable locking member **36***a* which is biased by a spring **36***b* so that it is constantly exerting a pressure upon the plunger **22.** When the groove **34** alignes itself with the locking member **36***a*, the locking member **36***a* moves into the groove **34** and locks the plunger **22** in its locked position (see FIG. **4**).

The key-actuated cam means **38** is mounted in the housing **20** and includes a cam housing **38***a* and a cam **38***b* rotatably mounted therein. The cam **38***b* is rotated by a key **38***c* and has an eccentric projection **38***d* which extends into a slot **36***c* in the locking member **36***a*. When the locking member **36***a* is in its locking position, i.e., when it has moved to the right such that it is in the groove **34** when viewing FIGS. **2** and **4,** the projection **38***d* is against one end of the slot **36***c* as seen in FIG. **4.** Upon rotation of the key **38***c* the projection **38***d* moves to the left (as shown in dotted lines in FIG. **4**) against the force of the spring **36***b* and releases the plunger **22,** which may then be moved by hand out of the hole into which it has been inserted to lock the door. In this way, the sliding door is unlocked and free to move again on the track.

When the key **38***c* is rotated back to its normal position the locking means **36** is free to be urged toward the right again by the spring **36***b*. The cam **38***b* has two stop projections **38***e* and **38***f* which prevent the cam **38***b* from being turned too far when the key **38***c* is used to release the locking means **36** and to return the cam **38***b* to its normal position, respectively.

Extending from one end of the housing **20** is a securing pin **42** which will extend into a hole (not shown) in the door frame, wall, or the like when the lock **14** is in its locked position. The securing pin **42** prevents the lock **14** from being moved in a vertical direction and thus prevents the sliding doors **10** and **12** from being moved upwardly out of the track **19.** On the opposite end of the housing **20** there is a rubber-coated projection **44** which, in effect, serves as a bumper knob. For example, referring to FIG. **1,** the lock **14** on the door **12** may bump into the frame **16** of the sliding door **10** when either door is opened. The bumper **44** prevents damage to the frame or the lock **14** if such contact should occur.

The housing **20** has a plurality of holes **40** extending therethrough which permit the lock **14** to be mounted with either face adjacent the frame of the door. These holes and the position of the securing pin **42** and projection **44** permit the lock **14** to be used on any corner of the sliding door.

While the embodiment described herein is at present considered to be preferred, it is understood that various modifications and improvements may be made, and it is intended to cover in the appended claims all such

modifications and improvements as fall within the true spirit and scope of the invention.

What is claimed is:

1. A lock for a sliding door, movable along a horizontal track, adapted for mounting in any corner of said door comprising:

a housing having a vertically extending opening;

a plunger, having a slot and a groove, movably mounted in said opening, said plunger having a retracted position and a locked position, and said plunger further having an actuation end extending from said housing when said plunger is in said retracted position, and a locking end extending from said housing when said plunger is in said locked position;

a stationary guide pin secured within said housing extending through said slot in said plunger;

a spring-biased locking member movably mounted within said housing and adapted to extend into said

groove in said plunger when said plunger is in its locked position;

a cam engagable with said spring-biased locking member to release said plunger and permit said plunger to be moved to its retracted position; and

a securing pin extending outwardly from said housing in a direction perpendicular to said plunger for retarding vertical forces applied to said sliding door, whereby said sliding door cannot be moved along said track, or raised off of said track when said plunger is in said locked position.

2. The lock of claim 1 wherein said cam is actuated by a key.

3. The lock of claim 1 wherein said housing includes a plurality of openings extending therethrough by which said housing may be attached to said sliding door.

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