Dec. 12, 1961 E. E. SPORK 3,012,430

SLIDING DOOR LOCK

Filed Aug. 27, 1959 2 Sheets-Sheet 1

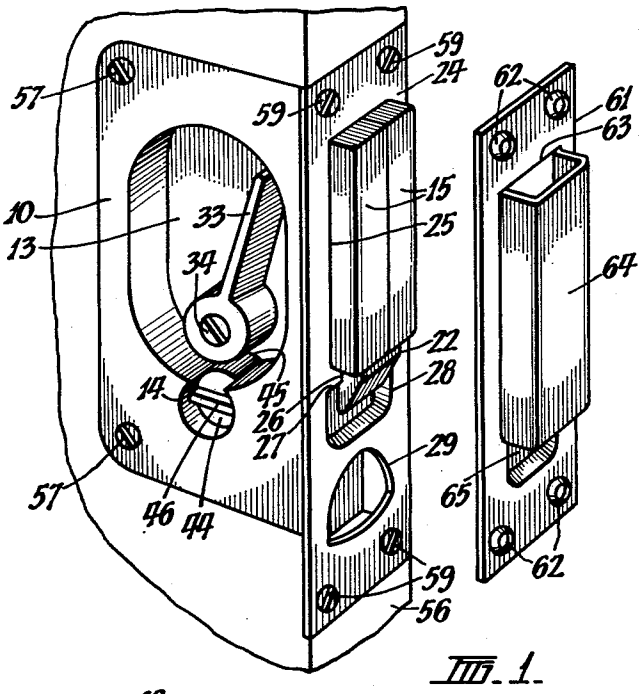

Fig. 1.

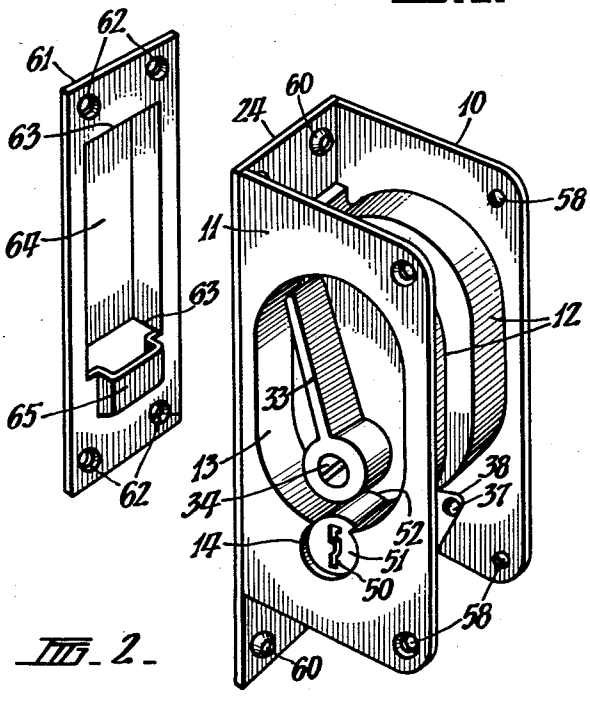

Fig. 2.

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SLIDING DOOR LOCK

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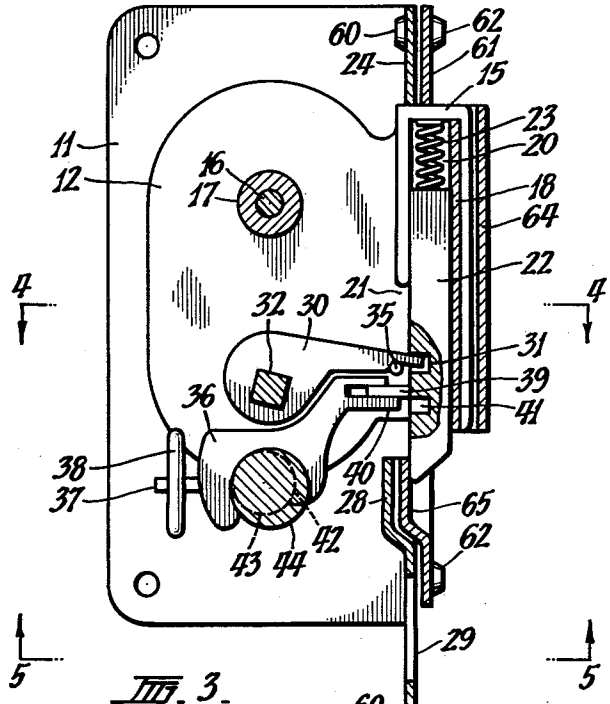

Fig. 3.

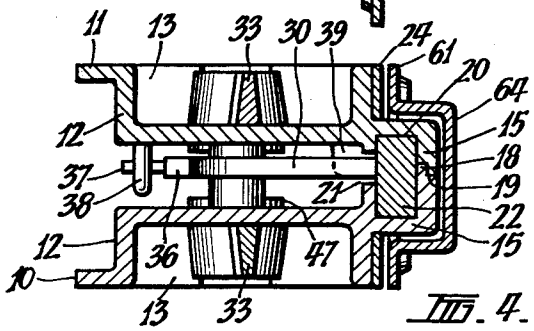

Fig. 4.

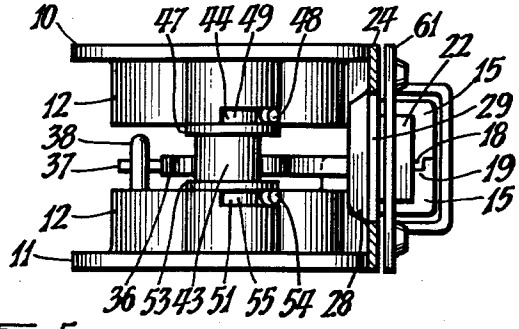

Fig. 5.

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SLIDING DOOR LOCK

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This invention relates to a sliding door lock.

The invention has for its principal object the provision of a very simple yet effective sliding door lock which may be used to advantage on domestic or other sliding doors.

Other objects of the invention are to provide a lock of this character which may be simply and inexpensively manufactured; may be easily and conveniently fitted to a sliding door, and which is adapted to be latched from the inside, after which it may be released from the outside only by the use of a key.

With the foregoing and other objects in view, the invention resides broadly in a lock for a sliding door including a lock housing adapted to be secured to the leading stile of a sliding door; a bolt mounted in vertically slidable manner at the front of the locking housing; spring-loading means adapted to urge the bolt in one direction to operative position at which the bolt is adapted to engage a striker plate mounted at a side of the door opening, when the door is brought to closed position, to hold the door closed; and a handle, mounted on the lock housing, operatively connected to the bolt and adapted to be moved to move the bolt to inoperative position. Other features of the invention will become apparent from the following description.

In order that a preferred embodiment of the invention may be readily understood and put into practical effect, reference will now be made to the accompanying drawings, wherein:

FIG. 1 is a front perspective view of a lock according to the invention fitted to a door, and also the associated striker plate, the whole being viewed from the in-door side;

FIG. 2 is a rear perspective view from the out-door side of the lock assembly and the striker plate;

FIG. 3 is a sectional side elevational view of the lock assembly, the bolt thereof being engaged with the striker plate;

FIG. 4 is a sectional view along line 4—4 in FIG. 3, and

FIG. 5 is a sectional view along line 5—5 in FIG. 3.

The lock shown in the drawings has a lock housing including an in-door side plate 10 and an out-door side plate 11, each substantially rectangular in form, while each has formed integrally therewith an inward projection 12, hollowed from the outside to form a handle housing 13 of substantially elliptical form and a barrel housing 14 below and in communication with the handle housing 13. Formed integrally with each of the side plates 10 and 11 and with the inward projection 12 is a forward projection 15 of generally rectangular shape extending forwardly of the front of the side plate 10 or 11 and hollowed from its inner side.

The inward projection 12 of the out-door side plate 11 is formed with an integral inwardly-extending locating pin 16, and the inward projection 12 of the in-door side plate 10 is formed with a corresponding locating sleeve 17. The two side plates 10 and 11, oppositely arranged, may be aligned and brought together so that the locating pin 16 of the one engages the locating sleeve 17 of the other, whereupon a tongue 18 formed integrally with the front plate of the forward projection 15 of the in-door side plate 10 engages in a corresponding groove 19 in the front part of the forward projection 15 of the out-door side plate 11, the hollowed interiors of the two forward projections 15 constituting a bolt housing 20 which is open at its bottom and has a slotted opening 21 in its lower inward or rear part.

A bolt 22 is vertically slidable in the bolt housing 20, its lower end being shaped obliquely in usual manner and as shown in FIGS. 1 and 3, and it is urged downwardly by a helical compression bolt spring 23 interposed between the top of the bolt 22 and the top of the bolt housing 20.

The lock assembly includes a substantially rectangular front plate 24 which is abutted against the front edges of the side plates 10 and 11, the aligned and interfitted front projections 15 passing closely through a rectangular opening 25 in the front plate 24. Below the opening 25 the front plate 24 is cut away at 26 to a lesser width for the bolt 22, and below this cut-away portion 26 a transverse cut is formed in the front plate 24 at 27, and therebelow the front plate 24 is shaped to form a recessed part 28 into which the lower end of the bolt 22 normally extends. The front plate 24 extends downwardly below the bottom of the side plates 10 and 11, and as shown in FIGS. 1 and 3, a finger-hole 29 is formed in the front plate 24 below the recess 28.

The bolt 22 is engaged by the forward end of an actuating lever 30 which extends through the slotted opening 21 of the bolt housing 20 and into an aperture 31 formed from the inner or rear face of the bolt 22. The actuating lever 30, at its rear end, is non-rotatably engaged upon a square-section shaft 32 which is rotatable in corresponding apertures in the inward projections 12 of the two side plates 10 and 11. To each end of the square-section shaft 32 a handle 33 is non-rotatably fitted and secured by a screw 34, the handles 33 being fully enclosed within the handle housings 13 of the side plates 10 and 11. When either of the handles is turned, the associated actuating lever 30 is caused to lift the bolt 22 against the action of the bolt spring 23, and when the handle 33 is released the bolt 22 is returned by the action of the spring 23 to lowered or operative position, its downward movement being limited by a stop pin 35 formed integrally with the inward projection 12 of the out-door side plate 11, the actuating lever 30 being brought to bear against this pin 35.

The lock assembly includes a latch 36 in the form of a shaped plate having at its rear end an integral rearwardly-extending guide pin 37 horizontally slidable in an aperture in a lug 38 formed integrally with the out-door side plate 11. The latch 36 at its forward end is bifurcated and slidably engaged with a guide lug 39 formed integrally with the inward projection 12 of the out-door side plate 11. The lower arm of the bifurcated front end of the latch 36 constitutes a latch pin 40 adapted, when the latch 36 is moved slidably forwards and the bolt 22 is in operative or lowered position, to engage in a hole 41 formed from the rear or inner face of the bolt 22.

The latch 36 has formed in its underside a recess 42 which is closely engaged by an eccentric 43 formed integrally at the inner end of a latch barrel 44 which is rotatable in a hole formed at 45 through the inward projection 12 of the in-door side plate 10 and in the coaxial barrel housing 14 of the side plate 10. At its outer end the latch barrel 44 is formed with an integral diametrical flange 46 by which it may be easily turned digitally to rotate the eccentric 43 so as to cause the latch 36 to be advanced forwards to operative position or retracted to inoperative position. A peripheral flange 47 about the inner part of the latch barrel 44 prevents it from moving outwardly, and a stop 48 extending radially from the latch barrel 44 and engaging in a recess 49 formed in the part of the inward projection 12 enclosing

the housing **14** for the latch barrel limits the rotational movement of the latch barrel **44** as shown in FIG. 5.

The latch **36** may be moved to inoperative position, from the out-door side of the assembly, only by means of a key engaged in a key slot **50** formed in a key barrel **51** rotatably mounted in the barrel housing **14** of the out-door side plate **11** and in a corresponding aperture at **52** in the inward projection **12** of that side plate, the key barrel **51** having an integral peripheral flange **53** about its inner end which abuts against the eccentric **43**, so that the key barrel **51** is prevented from moving outwardly. An appropriate key, inserted into the key slot **50**, will also engage in suitable recesses in the eccentric **43** so that by turning the key the eccentric will be turned to move the latch **36** to inoperative position or to operative position, as may be required. A stop **54** extending from the inner part of the key barrel **51** and engaging in a recess **55** in the part of the inward projection **12** enclosing the housing **14** for the key barrel **51** limits the rotational movement of said key barrel.

The lock may be fitted to the leading stile **56** of a sliding door which has first been appropriately cut away or recessed to receive the side plates **10** and **11** and associated parts and the front plate **24**, the side plates being secured in place by screws **57** passing through counter-sunk holes **58** near their rear corners, the front plate **24** being secured by screws **59** passing through counter-sunk holes **60** near its corners.

The lock is adapted to coact with a striker plate **61** consisting of a single sheet metal element formed with counter-sunk screw holes **62** near its corners whereby it may be secured by screws to a wall or jamb or to the leading edge of another sliding door to which the leading stile **56** of the sliding door is advanced when said door is closed. Two transverse cuts are formed in the striker plate **61** at **63**, and between these cuts the metal of the striker plate is deformed to constitute a concavity **64** adapted to receive the interfitted front projections **15** enclosing the bolt housing **20**. Below the lower of these transverse cuts **63**, the metal of the striker plate **61** is deformed in the opposite direction to form an advanced or forwardly-projecting strike **65** such that, when the sliding door is moved to fully closed position, the shaped bolt **22** will be brought against the strike **65** and thus be forced upwardly until it clears the top of the strike which is then received into the recess **28** of the front plate **24**, the bolt **22** then moving downwardly to hold the strike **65** in place within the recess **28**, so that the door is secured in fully closed position. The door may then be opened only by moving one of the handles **33** to cause the bolt **22** to be raised clear of the strike **63**.

As no part of the lock assembly, including the side plates **10** and **11**, the handles **33**, the latch barrel **44** and the key barrel **51**, projects beyond the in-door and out-door faces of the sliding door, the door may be mounted in such a way that it may be moved slidably into a wall recess, into fully open position, in which case it may be easily and conveniently drawn towards closed position by means of a finger engaged in the finger hole **29** of the front plate **24**.

While sliding doors as described and illustrated will be found to be very effective in achieving the objects for which the invention has been devised, it will be understood that this particular exemplary embodiment of the invention may be subject to many minor modifications of constructional detail and design without departing from the scope and ambit of the invention, as defined by the appended claims.

What I claim is:

1. A lock for a sliding door comprising, a housing adapted to be mounted in the door adjacent the leading edge thereof, said housing being formed by a pair of side plates having peripheral portions with surfaces flush with the sides of the door and with central portions which are spaced from each other to form a central cavity and are recessed to form handle pockets, said housing also including a portion which projects beyond the surface of said leading edge of the door and forms a bolt pocket with a vertical opening, a bolt slidably mounted within said pocket with a projecting end positioned within said opening, a bolt-operating handle assembly comprising a shaft extending through said central cavity and a pair of handles positioned respectively within said handle pockets and rigidly mounted upon said shaft, said shaft being journaled to permit said handles to be rocked, a bolt-operating lever rigidly mounted upon said shaft and having an arm projecting into a recess in said bolt whereby the rocking movements of said handles produces sliding movements of said bolt, a coil spring positioned between a wall of the pocket and said bolt and urging said bolt into its projected position whereby the bolt may be moved to a retracting position against the action of said spring, a striker plate adapted to be mounted in a fixed position and in cooperative relationship with said lock, said striker plate having a projecting strike which is adapted to be engaged by the projecting end of said bolt and to hold the door when said bolt is in its projected position and to release the door when said bolt is moved to its retracted position, a latch mounted within said central cavity and slidably mounted to move transversely of the surface of said leading edge of the door and having a bolt-engaging portion which is adapted to move to and from a latching pocket in said bolt whereby the sliding of said bolt is prevented when said portion of said latch is positioned within said latching recess, and a rotatable latch-operating mechanism which is adapted to be turned through a predetermined arc to slide said latch to and from the bolt-latching position.

2. A construction as described in claim 1, wherein said latch-operating mechanism includes a key barrel and a key which is inserted therein for manual operation.

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