Sept. 2, 1969 SAKUZO TORII 3,464,242

DEAD BOLT LOCK OPERATING MEANS

Filed May 8, 1967

FIG.1

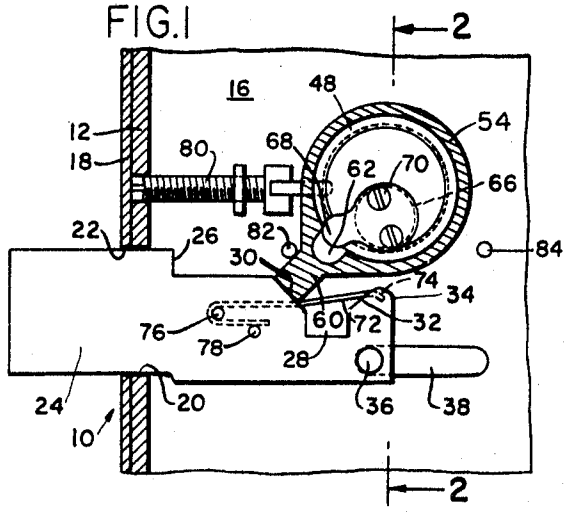



FIG.3

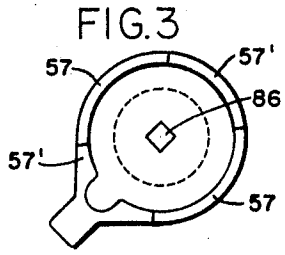



FIG.4

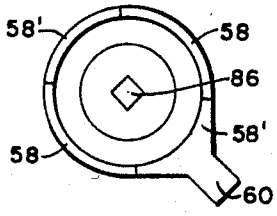
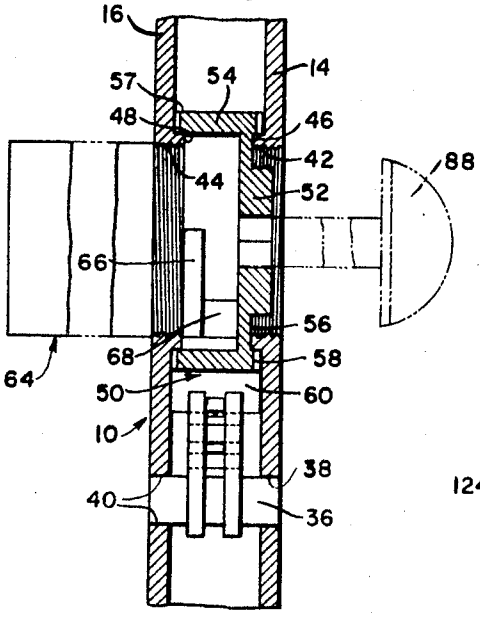



FIG.2



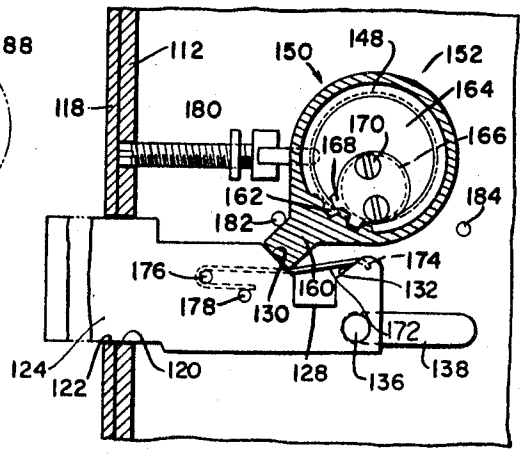




FIG.5

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3,464,242
Patented Sept. 2, 1969



3,464,242

# DEAD BOLT LOCK OPERATING MEANS

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Filed May 8, 1967, Ser. No. 636,890
Int. Cl. E05b 65/06
U.S. Cl. 70—134 3 Claims

## ABSTRACT OF THE DISCLOSURE

The invention includes a lock housing having a sliding bolt therein projectable through a suitable opening in an edge of the housing. Rearwardly of the bolt is an extension having a notch engageable by an operating means. The bolt operating means comprises a cup-shaped member rotatably mounted within the housing and having a projecting finger engageable in the notch to slide the bolt forward and back. A cylinder having key operated plug provided with a suitable cam finger is arranged so that the finger engages a notch in the cup-shaped member to rotate same upon rotation of the key and plug. The bottom of the cup-shaped member has a polygonal opening to be engaged by a suitable handle to operate the bolt from the inside, if desired. At either end of the movement of the bolt, the finger on the cup-shaped member is spring held in contact with a sloping surface, rendering the bolt jarproof and substantially jimmy-proof.

This invention relates to a dead bolt lock operating means.

It is an object of this invention to provide a sliding bolt lock having a rotatable intermediate bolt operator.

A further object of the invention is the provision of means positively holding the bolt in either locked or unlocked position.

An additional object of this invention is the provision of a rotatable bolt operating member having a suitable notch or depression therein engageable by the cam member of a key operated plug in a cylinder member.

These and other objects will become apparent upon consideration of the following specification taken with the accompanying drawings, which together form a complete disclosure of this invention.

In the drawings, wherein like characters of reference indicate like parts throughout the several figures:

FIG. 1 is a fragmentary vertical section through the lock;

FIG. 2 is a section on the line 2—2 of FIG. 1, looking in the direction of the arrows;

FIG. 3 is an inside view of the bolt operator in one position;

FIG. 4 is a rear view of same, and

FIG. 5 is a vertical section of a slightly modified form of bolt operating mechanism.

Referring to FIGS. 1 to 4, the numeral **10** indicates a lock housing of generally rectangular shape having a front edge wall **12** and inside and outside or right and left walls **14**, **16**. As an element of finish or trim, the edge wall **15** may be covered by a polished plate or the like **18**. The end wall **12** and the plate **18** have registering rectangular openings **20**, **22** therein, respectively, to accommodate the sliding bolt **24**, which in this instance is rectangular in cross section. The locking portion of the bolt is slidably projectible through the openings **20**, **22**, and in normal locked position projects slightly within the casing **10** to the shoulder **26**. Rearwardly of the shoulder **26**, an extension of the bolt has a notch **28** which is provided with upwardly sloping portions **30**, **32** for a purpose later to be described. Adjacent the end **34** of the bolt **24**, there is mounted a transverse pin **36** which rides in slots **38**, **40** in the side plates **14**, **16**, respectively, to provide a longitudinally extending bearing for the bolts **24**.



The walls **14**, **16** are provided respectively with registering threaded openings **42**, **44**, said openings respectively having annular ridges **46**, **48** therearound. Mounted on the ridges **46**, **48** is a cylindrical cup-shaped bolt operating member **50**, having a bottom **52** and a cylindrical wall **54**. The bottom preferably has an annular depression **56** providing a flange **58** to engage the ridge **46** to support the member **50**, the mouth or open end of which encircles the flange **48**.

Projecting from the cylindrical wall **54** is a bolt operating lug or finger **60**. In line with the lug **60**, without the operator **50**, there is a notch **62** for a purpose later to appear. A cylinder lock means **64** of known type, having the usual threaded periphery and the key operated plug **66**, is mounted in the opening **44**. The cam **68** is mounted on the inner end of the plug **66** as by screws **70**.

A spring **72**, engaging at one end in a slot **74** and at the other end passing in a loop about pins **76**, **78**, bears against the lug **60** during its entire movement, and when at rest on inclined portions **30**, **32**. A screw **80** holds the cylinder **64** in position in the usual manner. When a key is inserted in the plug **66**, the plug is rotated to rotate the cam **68**, which engaging in the groove **62**, rotates the operator **50**. The lug **60** on the operator **50** engages in the notch **28** to move the bolt **24** either to locked or unlocked position. In either position, the bolt **24** is held against accidental movement by the tension of the spring **72**. The operator has the flanges **57**, **58**, cut away at diametrically opposite points **57'** and **58'** and the flanges **57**, **58**, position the operator within the housing in a manner such that the lug **60** does not rub against the side plates **14**, **16**. Stop pins **82**, **84** limit the rotation of the operator **50**.

A noncircular, preferably rectangular, opening **86** is formed in the bottom of the cup member **50** to accommodate a similarly shaped end of a knob stem or handle **88**, if such a device is desired, so that the bolt may be operated from the inside. Also, a key may be used here as well as on the outside.

In FIG. 5, the modification includes end plate **112**, ornamental cover plate **118**, bolt **124** passing through openings **120**, **122** in the plates **112**, **118**. The bolt **124** has a pin **136** riding in the slot **138**. The operator **150** has a lug **160** which engages the notch **128** in the bolt **124**. The spring **172** engages the pins **176**, **178** and the slot **174**, and presses against the lug **160**. The lug **160** rests on the inclined faces **130**, **132** of the notch **128** at locked and unlocked positions, respectively, and is thus spring urged against accidental removal. The operator **150** rotates on flanges similar to **46** and **48**, only one, **148**, being shown. The cylinder **164** has a key operated plug **166**, with a cam held in place by screws **170** and having teeth **168**, which engage recesses **162** in the operator **150**. A screw **180** holds the cylinder **164** in position. Stop pins **182**, **184** limit rotation of the operator. Except for the teeth **168** and the recesses **162**, the operator performs exactly like the operator of FIGS. 1 to 4.

Although preferred modifications of this invention have been described, it is to be understood that other forms and modifications may be devised within the skill of the art.

I claim:

**1.** A lock comprising a housing, a bolt slidably mounted in said housing for reciprocation between a locked and unlocked position, a notch in said bolt intermediate its ends having oppositely inclined surfaces on the facing sur-

faces thereof, a rotatably mounted operator comprising a lug having a surface congruent with said inclined surfaces for engagement with said inclined surfaces, stop means for limiting rotation of the operator, spring means urging said lug into engagement with said top means at said locked and unlocked position with said lug surface opposing either said inclined surface and key operated cam means for reciprocating said bolt.

2. A lock as defined in claim 1 wherein said key operated means comprises a cam engaging the operator adjacent the lug.

3. A lock as defined in claim 1 wherein the spring means comprises a leaf spring carried by the bolt bridging the notch and in biasing contact with the lug.



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