Sept. 20, 1971 R. L. LUCAS 3,606,424

DOOR LOCKING DEVICE

Filed Nov. 13, 1969 2 Sheets-Sheet 1

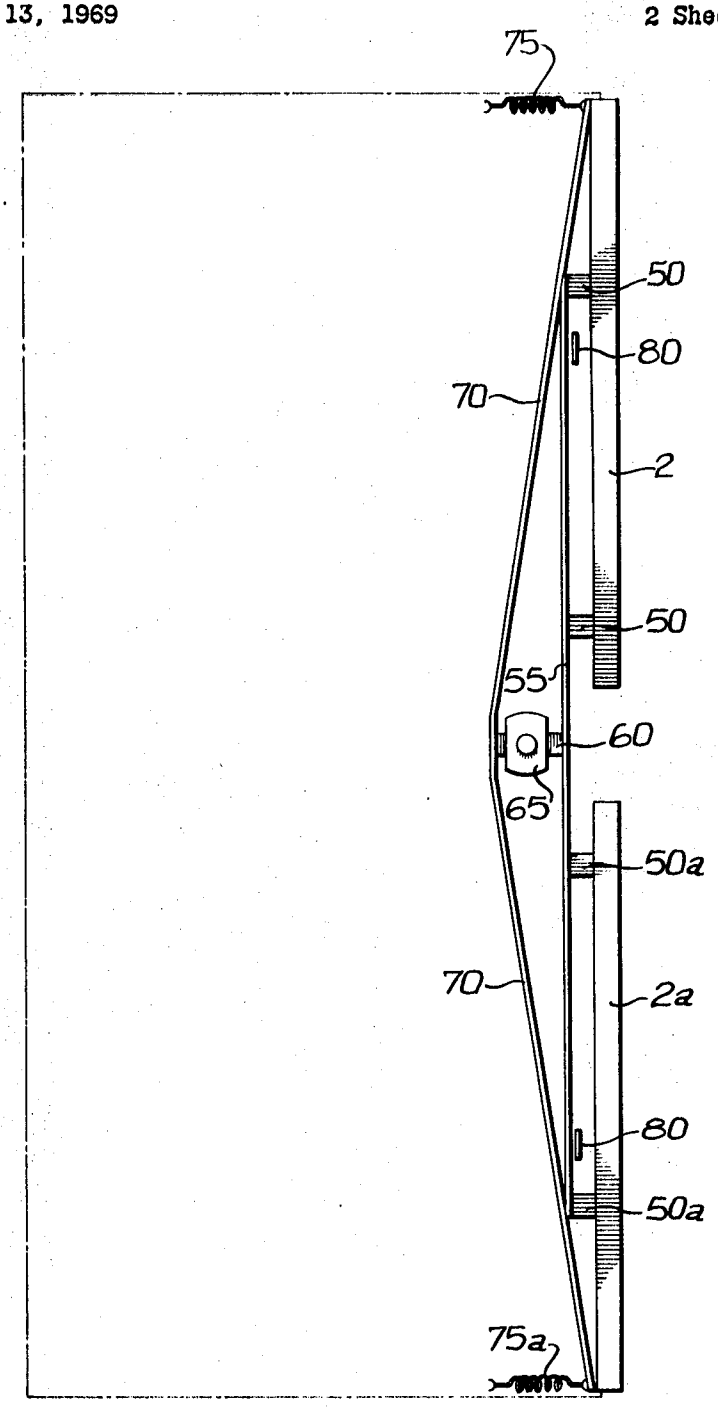

FIG. 1

INVENTOR
Roger LUCAS
BY
Raymond A. Robbins
ATTORNEY

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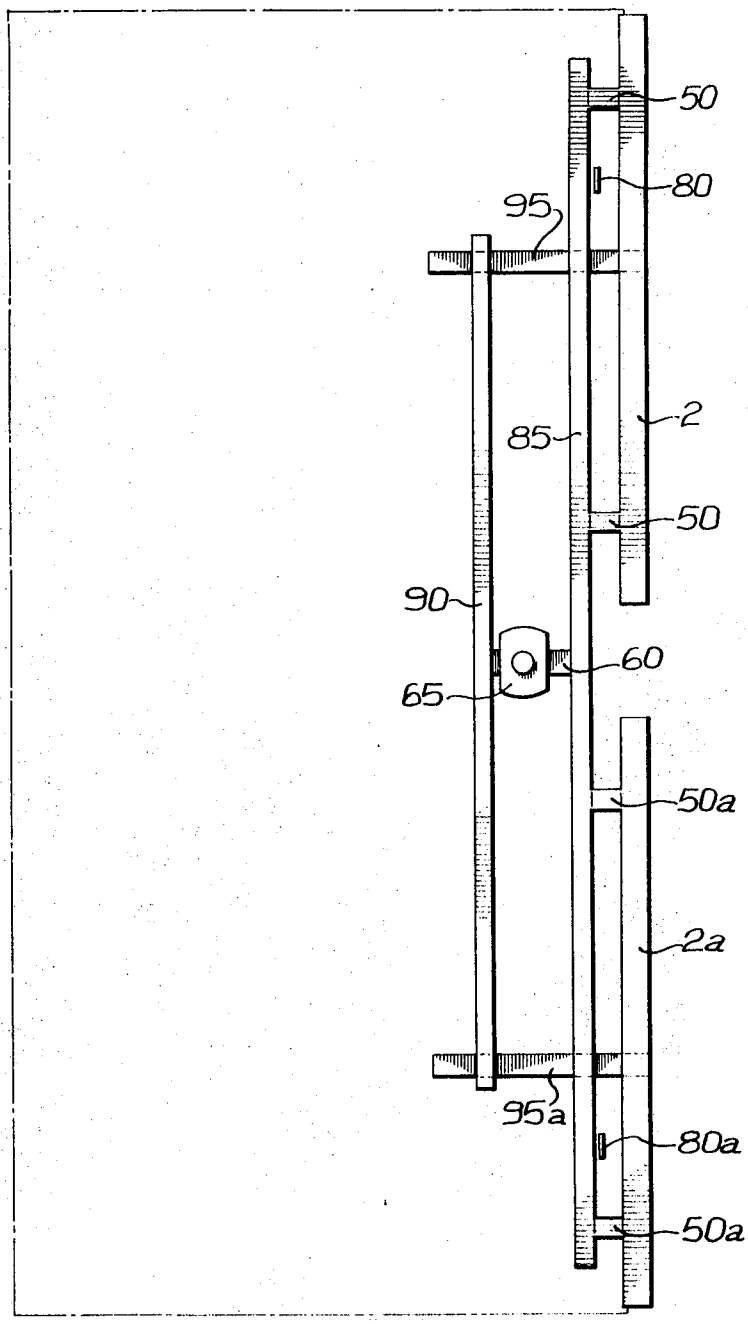

FIG. 2

INVENTOR
Roger LUCAS
BY
Raymond & Davis
ATTORNEY

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DOOR LOCKING DEVICE

Roger Lucas, 106 Cours Albert-Thomas, Lyon 8e, Rhone, France

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U.S. Cl. 292—157 5 Claims

ABSTRACT OF THE DISCLOSURE

A door locking device in which an elongated vertically extending locking plate having a length substantially equal to the height of the door is mounted within a slot formed along one edge of the door to be movable from a locking position wherein the locking plate projects beyond the edge of the door and an unlocked position wherein the locking plate is withdrawn within the slot, behind the edge. The locking plate is connected to a vertically extending link rod by means of a set of short lugs connected, on the one hand, to the locking plate and connected, on the other hand, to the link rod. The said link rod is secured at the center to one end of a latch bolt operable to be displaced in a reciprocating horizontal motion. A vertically extending brace is centrally connected to the other end of the latch bolt and to the upper and lower ends of the locking plate. Return springs are provided at the top and bottom of the door, having one end fixed to the door and the other end fixed to one of the ends of the locking plate.

The present invention relates to a device for locking doors and the like and more particularly to a locking device as disclosed in U.S. Pat. No. 3,225,575, issued on Dec. 28, 1965 to the present applicant and relating to a flat longitudinal member housed in the edge of a door or jamb and along the full height thereof, the plate being capable of engaging into a corresponding slot provided in the opposed edge of the jamb or of the door.

In order to cause translation of the locking member, there have been provided in U.S. Pat. No. 3,225,575, bell crank levers linked by tie rods controlled by an appropriate lock.

An object of the present invention lies in the provision of two embodiments of the door locking device, as provided in the said U.S. patent, wherein the flat locking member is controlled directly by the bolt of a conventional lock.

In a first embodiment of the invention, the bolt of the control lock carries the flat locking member which is directly secured by screwing, welding or fastening onto said bolt.

In another embodiment of the invention, the locking member is always solid with the bolt of a conventional control lock but it is supported at the upper and lower ends by guiding means, namely slide and guide members.

In both cases, the bolt of the conventional lock or the lock adapted for this particular use is the driving member acting directly on the locking member so that the latter projects from or is withdrawn within the edge of either a door or a jamb.

The invention will be better understood from the following description having reference to the appended drawings illustrating two preferred embodiments of the invention.

FIG. 1 is a diagrammatic side elevation view of the door locking device carried by the bolt of a conventional lock.

FIG. 2 is a view similar to that of FIG. 1 but wherein the device is carried by sliding means but always controlled by the bolt of a conventional lock.

In the drawings, the door is illustrated in broken lines. This may be a conventional apartment door or the door of an armored room or even that of a safe.

As shown in FIG. 1 or FIG. 2, the device comprises a locking member made of two parts **2** and **2***a*. It may be cut out of a flat iron plate or formed out of a shape. The upper part **2** of the locking member and the lower part **2***a* comprise short lugs **50** and **50***a* that are either cut out of the flat iron or are separate and welded thereto.

In FIG. 1, the parts **2** and **2***a* of the locking member are linked by a rod **55** welded to the four lugs **50** and **50***a*. The linking rod **55** is welded or screwed at the center, to the end of a bolt **60** of a conventional lock **65**. The other end of the bolt of the lock **65** is welded to a brace **70** of which the ends join the ends of parts **2** and **2***a* of the locking mmeber where they are welded. Return springs **75** and **75***a* are hooked, on the one hand, to the upper end of part **2** and the lower end of part **2***a* of the locking member and are secured, on the other hand, to hooks fixed to the door.

In the embodiment illustrated in FIG. 2, the locking member **2–2***a* is fixed to the bolt **60** of the conventional lock **65** by a link bar **85** welded or screwed to the ends of lugs **50** and **50***a* provided on the two parts **2** and **2***a* of the locking member. In this embodiment, the translation of the locking member **2–2***a* is guided by means of slide members **95** solid with locking member **2–2***a* and with link bar **85**, slide members **95** being displaceable in guide members solid with the door. Besides, resort may be had to any other known guiding device. Brace **90** coupling the slide members **95** is made solid with the other end of the bolt **60** of the conventional lock **65** by screwing or welding.

The operation of the locking device described herein does not differ in any way from that of the aforementioned U.S. Pat. No. 3,225,575 if only its control is simplified. Indeed, operation of the lock **65** drives the bolt **60** which controls the engagement of the two parts **2–2***a* that make up the locking device in a groove provided in the edge of a jamb or withdraws them when unlocking.

Stationary thrust members **80** welded to the bottom of the door and disposed between the locking member **2–2***a* and the linking member **55** or **85** limit the stroke of the locking member.

In order to obtain complete locking of a door, for instance that of an armored room, a second locking device as illustrated in FIG. 1 or FIG. 2 may be used, this second locking device being mounted on the hinge side of the door. The two locking devices thus provided are simultaneously controlled, in projecting or concealed position of the locking member, by a casement bolt located between the two devices.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. In a door locking device, the combination comprising:

(a) a door member having a vertically extending edge portion;

(b) a frame within which said door member is hingedly mounted, said frame including a jamb member having an edge portion extending vertically in facing relationship with the edge portion of said door member;

(c) a lock mounted on one of said members adjacent the edge portion thereof; said lock having a bolt displaceable in rectilinear reciprocating horizontal motion;

(d) a vertically elongated locking plate mounted on said one of said members for movement in a horizontal direction between locking position wherein said locking plate projects outwardly beyond the edge

portion of said one of said members to an unlocked position wherein said locking plate is retracted behind said edge portion of said one of said members;

(e) means connecting said locking plate to both ends of said lock bolt whereby said plate is displaced in said rectilinear reciprocating horizontal motion when said lock is actuated;

(f) the edge portion of the other of said members being formed with an outwardly open vertically extending slot facing the edge portion of said one of said members to receive said locking plate when said lock is actuated and said locking plate projects outwardly;

(g) said slot and locking plate being coextensive and extending substantially the full height of said door.

2. A combination as claimed in claim **1** wherein said locking plate is formed of an upper and a lower portion and said means recited in (e) comprises:

a vertically extending linking rod fast with one end of said locking bolt;

lugs secured to said rod and to said plate portions respectively, and

a vertically extending brace centrally fixed to the other end of said lock bolt and to the upper and lower ends of said locking plate, respectively.

3. A combination as claimed in claim **2** wherein springs are connected respectively at the upper and lower ends of said locking plate, on the one hand, and to said one of said members, on the other hand.

4. A combination as claimed in claim **1** wherein said locking plate is formed of an upper and a lower portion and said means recited in (e) comprises:

a vertically extending linking rod fast with one end of said locking bolt;

lugs secured to said rod and to said plate portions respectively;

a vertically extending brace centrally fixed to the other end of said lock bolt;

slide members secured to and linking said brace, rod and locking plate, and

guide members fixed to said one of said members, said slide members extending through said guide members to be guided thereby.

5. A combination as claimed in claim **4** including thrust members between said linking rod and locking plate to limit the movement of said locking plate.

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ALBERT G. CRAIG, JR., Primary Examiner

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49—316; 70—134; 292—177