Oct. 27, 1925. 1,559,160

L. E. CARTER

LOCK MECHANISM

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Fig. 1.

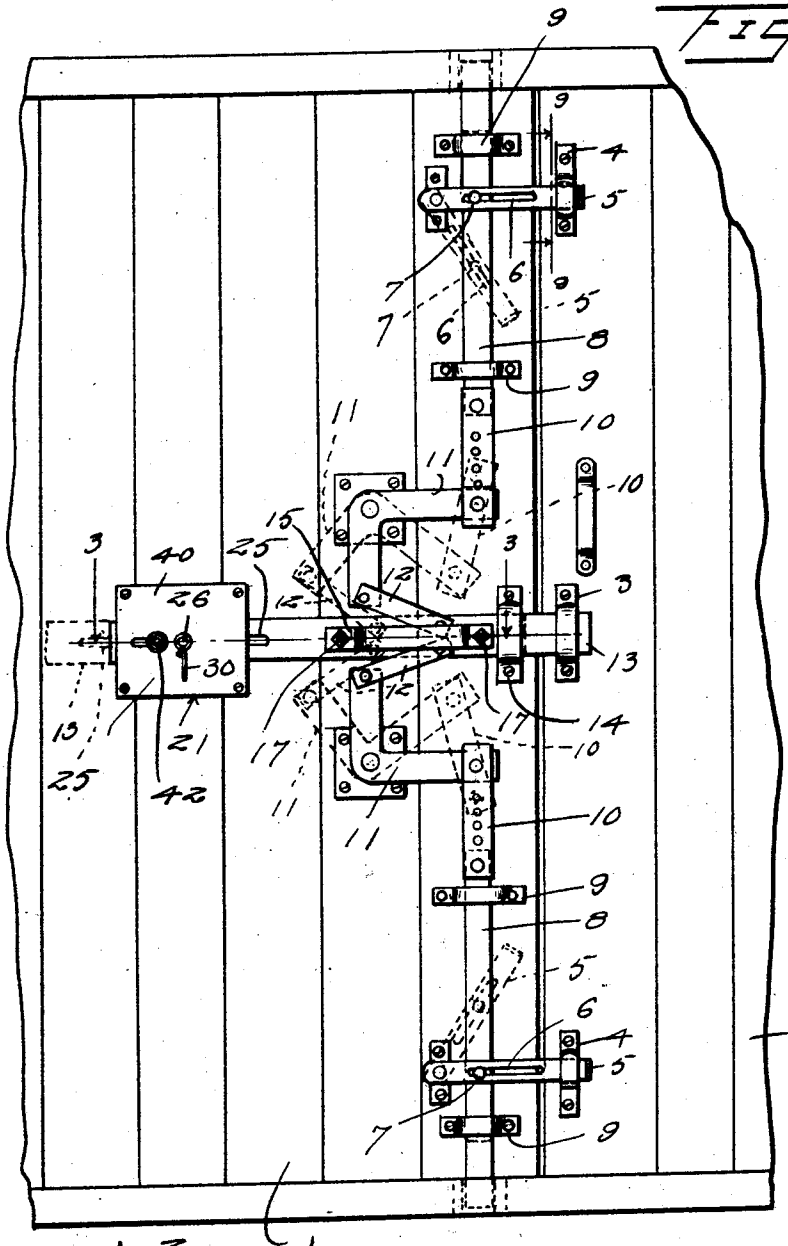
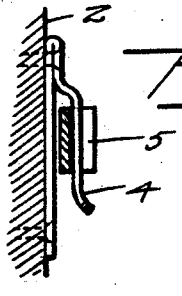


Fig. 9.



Inventor

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By [signature] Attorney

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LOCK MECHANISM

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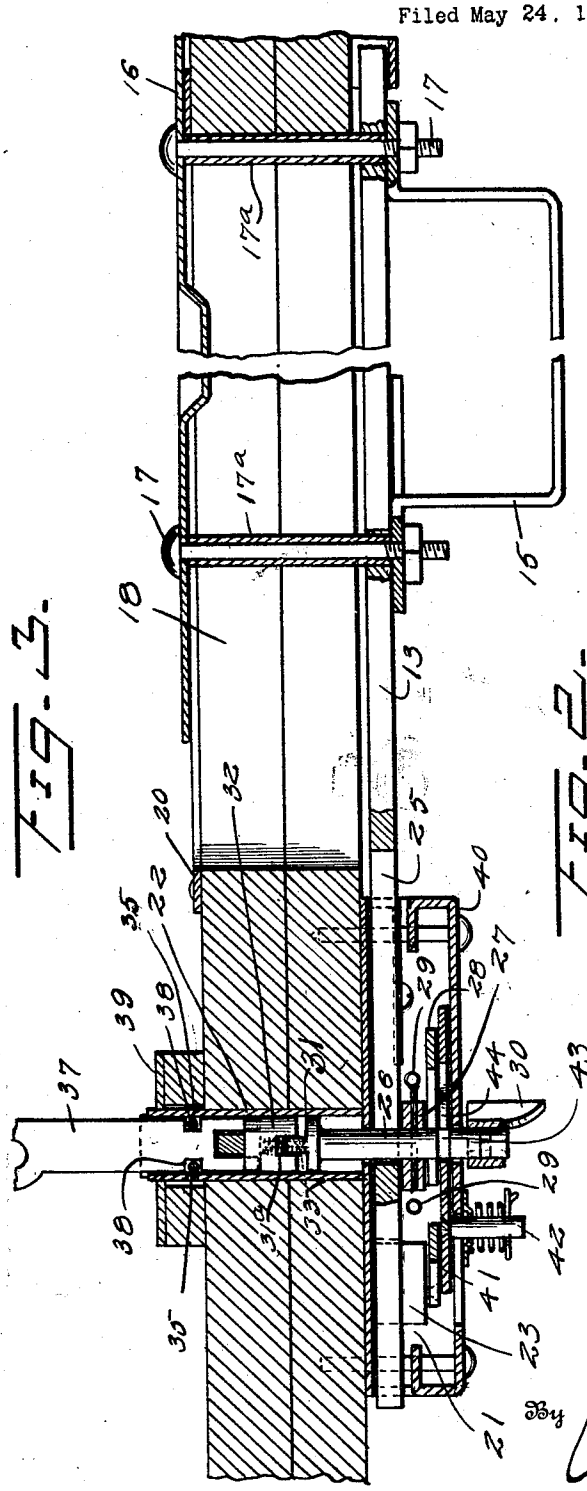


Fig. 3.

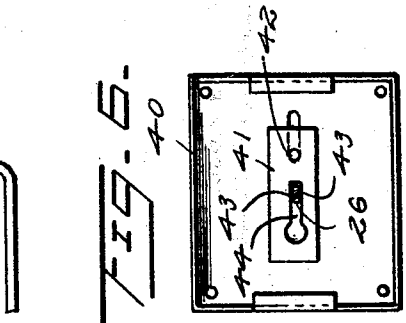


Fig. 5.

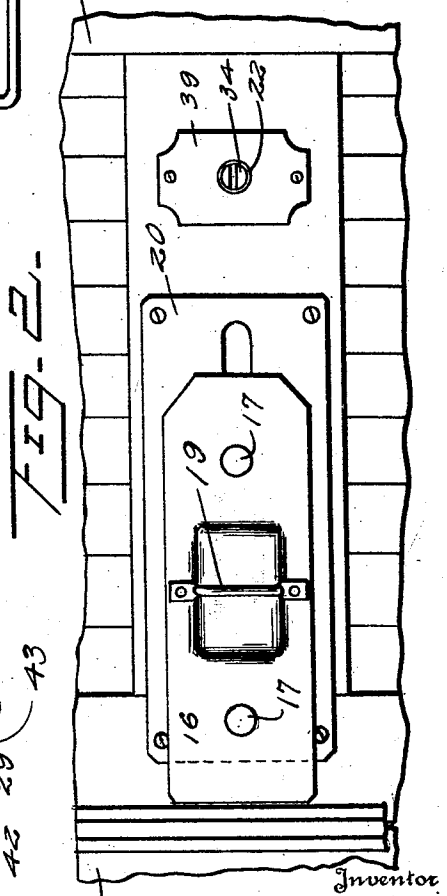


Fig. 2.

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By Randolph & Co.

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Oct. 27, 1925. 1,559,160

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LOCK MECHANISM

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Fig. 4.

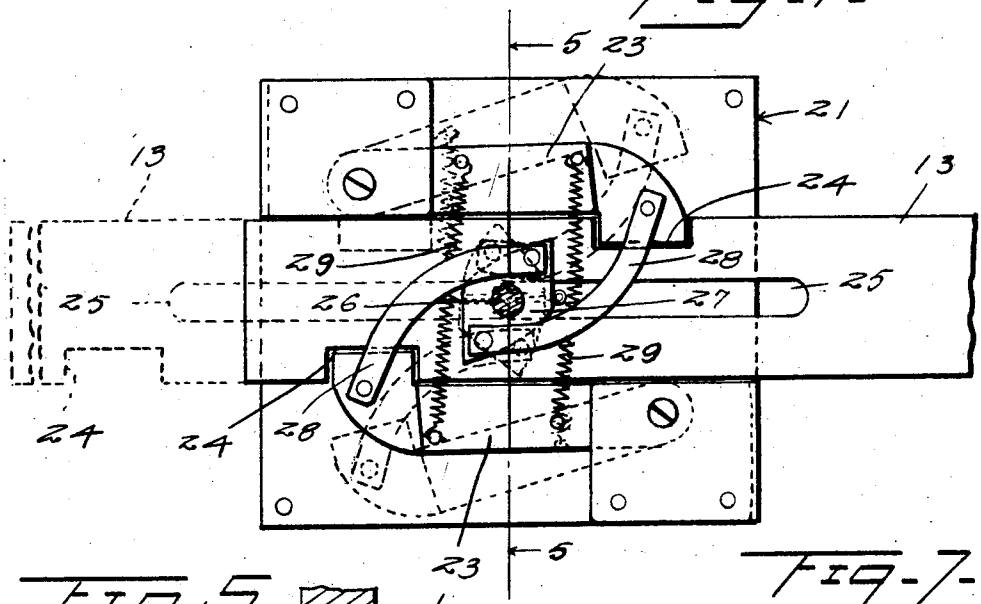


Fig. 5.

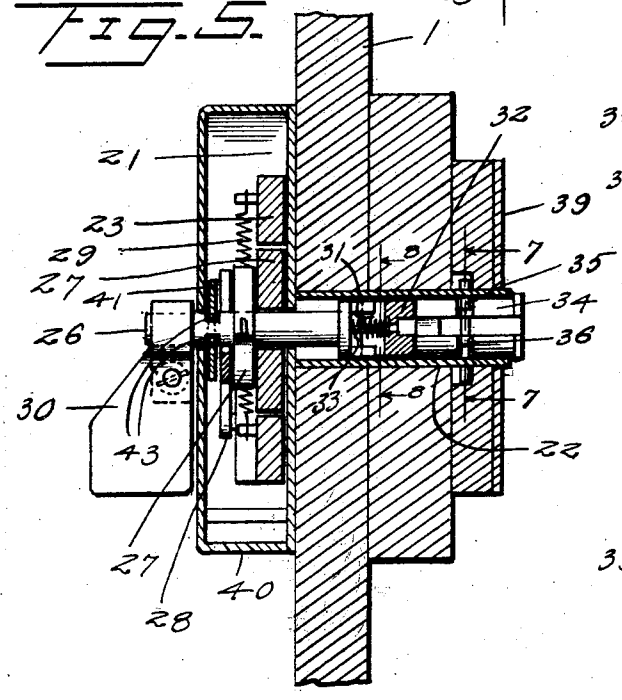


Fig. 7.

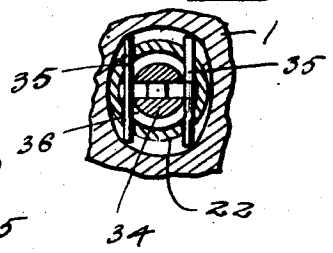
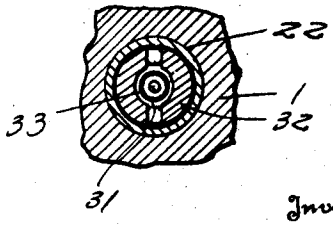


Fig. 8.



Inventor

L. E. Carter.

By W. Randolph Jr. Attorney

Patented Oct. 27, 1925. 1,559,160

UNITED STATES PATENT OFFICE.

LOUIS E. CARTER, OF ST. JOSEPH, MISSOURI, ASSIGNOR OF ONE-FOURTH TO FRED W. CORNELL, OF ST. JOSEPH, MISSOURI.

LOCK MECHANISM.

Application filed May 24, 1923. Serial No. 641,161.

To all whom it may concern:

Be it known that I, LOUIS E. CARTER, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented certain new and useful Improvements in Lock Mechanisms; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention has relation to a door locking mechanism embodying a system of bolts adapted to be thrown by hand and a lock for securing the bolts when projected into locking position.

The invention has for its object the provision of a lock mechanism for securing single, double or a plurality of swinging doors and which is equally well adapted for laterally or vertically sliding doors, the locking mechanism embodying a system of bolts for securing the door at the top, bottom and sides, and which bolts are adapted to be thrown by hand from either side of the door.

A further purpose of the invention is the provision of a lock for securing the bolts when projected into locking position, said lock being operable by hand or key and provided with a latch for securing the same against movement when required.

Other objects and advantages will be apparent and suggest themselves as the nature of the invention is understood.

While the drawings illustrate an embodiment of the invention it is to be understood that in adapting the same to meet different conditions and requirements, various changes in the form, proportion and minor details of construction may be resorted to without departing from the nature of the invention.

Referring to the accompanying drawings forming a part of the application:

Figure 1 is a view in elevation of a door showing those parts of the lock applied to the inner side thereof, the bolts being shown by full lines in projected position and by dotted lines in retracted position,

Figure 2 is a view in elevation of a portion of the door showing those parts of the lock applied to the outer side of the door,

Figure 3 is a sectional view taken on the horizontal plane indicated by the line 3—3 of Figure 1,

Figure 4 is a detail view in elevation of the lock, the cap plate thereof being removed and the main bolt being shown by full lines in projected and locked position and in dotted lines in retracted position,

Figure 5 is a sectional view on the vertical plane indicated by the line 5—5 of Figure 4,

Figure 6 is a detail view of the inner side of the cap plate showing the lock securing clutch, the slotted portion of the spindle being in section,

Figure 7 is a sectional view taken on the vertical plane indicated by the line 7—7 of Figure 5,

Figure 8 is a sectional view taken on the vertical plane indicated by the line 8—8 of Figure 5, and

Figure 9 is a sectional view taken on the vertical plane indicated by the line 9—9 of Figure 1.

Corresponding and like parts are referred to in the following description and designated in the several views of the drawings by like reference characters.

Referring to the accompanying drawings, the numeral 1 designates a door to which the lock mechanism is applied and 2 represents a complemental part which may consist of a door, a jamb or the like to which it may be required to secure the door 1 when closed and in position to be locked. Keepers 3 and 4 are secured to the part 2, the keeper 3 being closed at opposite ends and the keepers 4 being open at one end to admit of a latch engaging the same by a pivotal movement. Similarly constructed latches 5 are pivoted at one end to the upper and lower portions of the door 1, respectively, and their free ends are adapted to engage the keepers 4. Each of the latches 5 has a longitudinal slot 6 in which operates a pin 7 projecting from a bolt 8 which is mounted to slide in keepers 9. Two sliding bolts 8 are provided, the one for the top of the door and the other for the bottom of the door. A link 10 connects the inner end of each of the bolts 8 with an arm of a bell crank 11, the other arm of said bell crank being connected by means of a link 12 with a bolt 13 slidably mounted upon the door 1 for movement in a direction at a right angle to the movement

of the bolt 8. The bolt 13 is slidably mounted in a keeper 14 and is adapted to engage the keeper 3 and cooperate with a suitable lock whereby to secure the same when projected into locking position. The part 13 constitutes the main bolt and the auxiliary or supplemental bolts 8 are connected thereto by means of the bell crank 11 and links 10 and 12, and upon operating the main bolt 13, the auxiliary bolts 8 are simultaneously actuated to be projected into locking position or withdrawn so as to release the door 1. The latches 5 are simultaneously operated with the bolts by reason of the pin and slot connections thereof with the bolts 8.

A handle 15 is attached to the main bolt 13 and admits of operating the latch mechanism from the inner side of the door. A plate 16 disposed upon the outer side of the door 1 is connected to the main bolt 13 by means of bolts 17 which pass through a slot 18 formed in the door 1. The bolts 17 also serve to connect the handle 15 to the main bolt 13. A handle 19 is attached to the plate 16. A wear plate 20 is applied to the outer side of the door 1 and has a slot to correspond with the slot 18 through which the bolts 17 pass.

A suitable lock is applied to the door 1 and cooperates with the main bolt 13 to secure the same when projected into locking position, whereby to prevent unauthorized operation thereof. This lock comprises a casing 21 from which a barrel 22 projects. Pivoted dogs 23 are disposed within the casing 21 upon opposite sides of the main bolt 13 which slides through the casing and is provided in opposite edge portions with notches 24 to receive the engaging ends of the dogs 23. A longiudinal slot 25 formed in the main bolt 13 receives a spindle 26 to which is secured a hub 27 having opposite extensions which are connected by means of links 28 to the dogs 23. Contractile helical springs 29 cooperate with the dogs 23 to draw the same inward to cause their projecting ends to enter the notches 24 when the main bolt 13 is in position to bring the notches 24 in register with the engaging ends of the dogs 23. The spindle 26 projects beyond opposite sides of the casing 21 and one end receives a fingerpiece 30 and its opposite end is enlarged and provided with fingers 31 located in a groove 31^a at the inner end of a plug 32 which is slidably mounted in the barrel 22. The enlarged end of the spindle 26 projects into the barrel 22 and an expansible helical spring 33 normally holds the plug 32 pressed outwardly. A key guide 34 is rotatably mounted in the outer portion of the barrel 22 and is retained in place by means of pins 35 secured to the barrel and entering an annular groove 36 formed in the outer side of the guide 34, whereby to retain the latter in predetermined position. A key 37 is adapted to be introduced through the guide 34 and engage the plug 32, whereby to rotate said plug and the spindle 26 to move the dogs 23 so as to release the main bolt 13, whereby the lock mechanism may be actuated to release the door 1. Notches 38 are formed in opposite edges of the key 37 and when the key is pressed into the barrel 22, the plug 32 is moved inward against the tension of the spring 33, thereby bringing the notches 38 in position to clear the legs of the pin 35, whereby the key may be turned to throw the dogs 23 and release the bolt 13. An escutcheon plate 39 applied to the outer side of the door 1 receives the outer end of the barrel 22.

A cap plate 40 closes the casing 21 and is provided at its inner side with a sliding latch 41 which is adapted to engage the spindle 26 and prevent rotation thereof. A fingerpiece 42 projects from the latch 41 and provides convenient means for moving the latch so as to engage the spindle or release the same whereby the lock mechanism may be operated. Slots 43 are formed in opposite sides of the spindle 26 and are adapted to receive portions of the latch bordering upon opposite sides of a slot 44 formed therein.

When the main bolt 13 is projected into locking position, the auxiliary bolts 8 and the latches 5 are also projected into locking position, thereby securing the door 1 at five points and in the event of the part 2 being a swinging door, it is secured to the door 1 by the main bolt 13 and the latches 5 and since the door 1 is secured to the frame at the top and bottom, it follows that both doors 1 and 2 are made secure when in closed position. When the latch 41 is moved into locking engagement with the spindle 26, the latter cannot be turned either by the key or by means of the fingerpiece 30, hence the lock mechanism is made secure, but when the latch 41 is moved into position so as to release the spindle 26, the lock may be operated either by means of the key 37 or the fingerpiece 30 and when the dogs 23 are disengaged from the main bolt 13 the same may be moved by hand through the instrumentality of either of the handles 15 or 19, and when the bolt 13 is disengaged from the keeper 3, the bolts 8 clear the door frame and the latches 5 release the keeper 4 so that the door 1 may be swung into open position.

What is claimed is:

1. In locking mechanism, a sliding bolt, dogs disposed upon opposite sides of the bolt and adapted to engage the same and hold it in locking position, a spindle adapted to be operated by hand or key, and a link connection between said spindle and the dogs.

2. In locking mechanism, a sliding bolt,

dogs disposed upon opposite sides of the bolt and adapted to engage the same and hold it in locking position, a spindle adapted to be operated by hand or key, a link connection between said spindle and the dogs, and a latch adapted to engage the spindle and prevent rotation thereof and operation of the said dogs.

3. In lock mechanism, a sliding bolt, dogs arranged on opposite sides of the bolt, a spindle, a link connection between the spindle and each of the dogs, a latch for engaging the spindle to prevent rotation thereof, a fingerpiece at one end of the spindle, a key operated plug in engagement with the opposite end of the spindle, a spring normally urging said plug outwardly, a key guide, a barrel receiving an end portion of the spindle, and containing said plug and key guide, and a pin engaging openings in opposite sides of the barrel and entering an annular groove formed in the key guide and serving to retain the parts in position.

4. A lock comprising a slidable bolt provided with notches in its opposite edge portions, dogs disposed at opposite sides of the bolt and each pivoted at one end and having their free ends disposed for engagement in said notches, a contractile spring connected to said dogs, a spindle, and links pivotally connected to the spindle and to the free ends of the dogs.

5. A lock comprising a sliding bolt provided with a notch in one of its edge portions, a dog pivoted at one end and having its free end disposed for engagement in said notch, a spring adapted to urge the free end of the dog in the direction of the bolt, a spindle, and a link pivotally connected to the spindle and to the free end of the dog.

6. A lock comprising a spindle, a guide provided with a key receiving slot, a plug slidably mounted between and with respect to the spindle and guide and having engagement with the spindle, an expansible spring positioned between the spindle and plug, an element extending across the key receiving slot of the guide, a bolt, and locking means for the bolt under the control of the spindle.

7. A lock comprising a spindle provided with a finger, a guide provided with a key receiving slot, a plug slidably mounted between and with respect to the spindle and guide and provided with a slot receiving said finger, an expansible spring interposed between the spindle and plug, an element extending across the key receiving slot of the guide, a bolt, and locking means for the bolt under the control of the spindle.

8. A lock comprising a spindle, a guide having a key receiving slot, a plug slidably mounted between and with respect to the spindle and guide and connected to the spindle, an element extending across the key receiving slot of the guide, a bolt, locking means for the bolt under the control of the spindle, and a spring urging the plug in the direction of the guide.

In testimony whereof I affix my signature.

LOUIS E. CARTER.