Aug. 27, 1940. F. E. SPRADLING 2,212,957

LOCKING MECHANISM

Filed Feb. 28, 1940 2 Sheets-Sheet 1

Fig. 1.

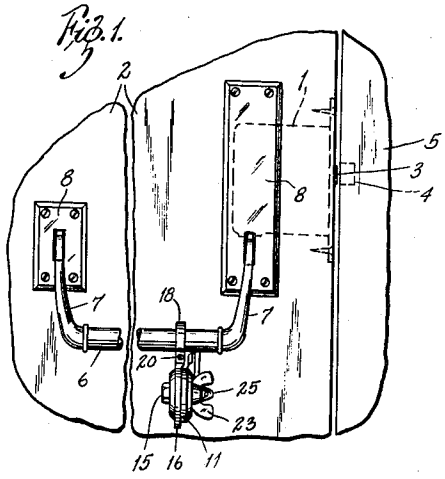
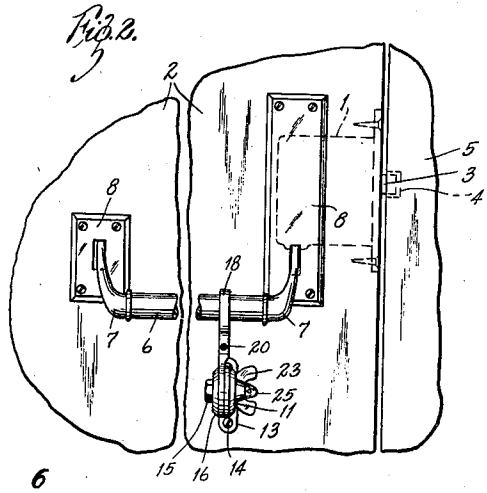



Fig. 2.



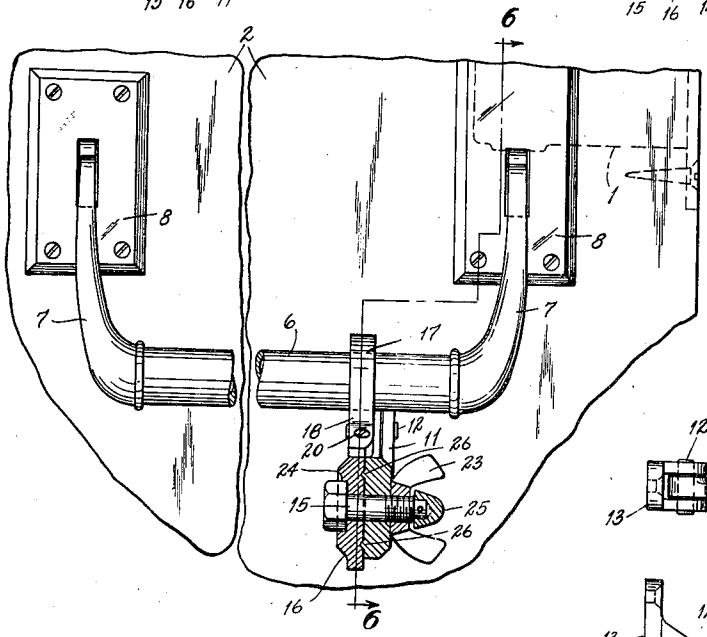




Fig. 3.

Fig. 10.

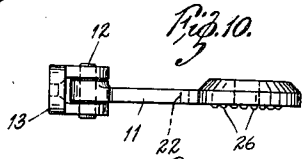



Fig. 9.

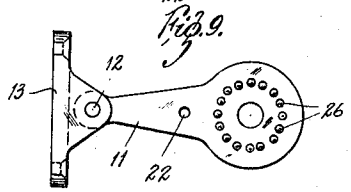



Fig. 8.

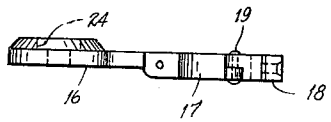
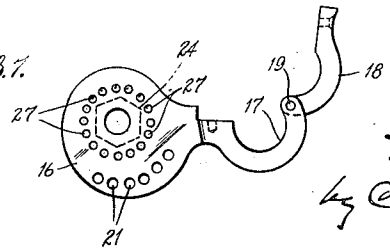



Fig. 7.




INVENTOR:
Fred E. Spradling
by Cornell Cornell Finnegan

HIS ATTORNEYS.

Aug. 27, 1940. F. E. SPRADLING 2,212,957

LOCKING MECHANISM

Filed Feb. 28, 1940 2 Sheets-Sheet 2

Fig. 4.

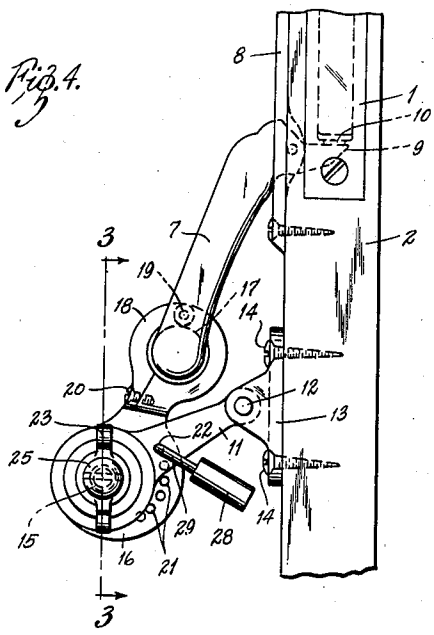



Fig. 5.

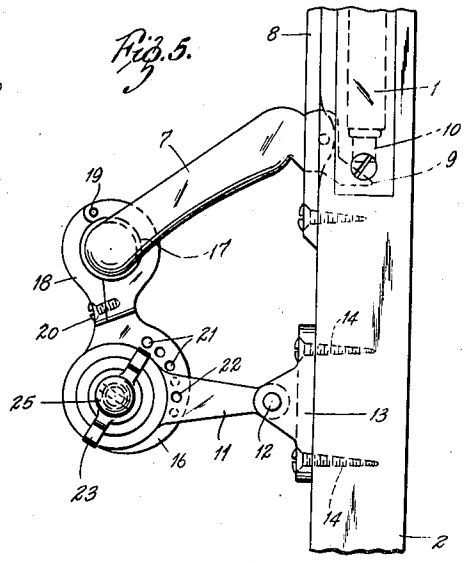
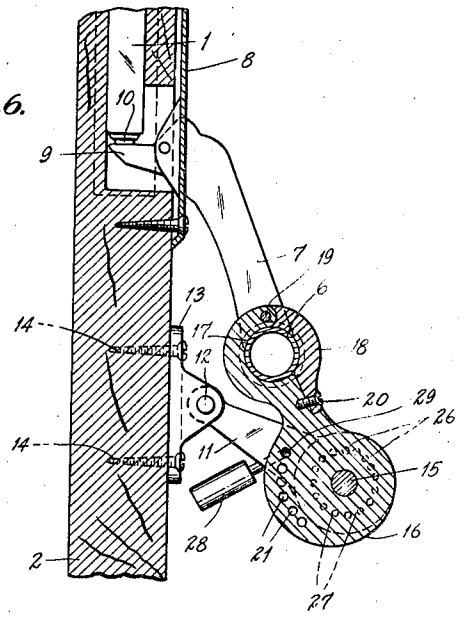



Fig. 6.




INVENTOR:
Fred E. Spradling
by Cornell Cornell Crowley
HIS ATTORNEYS

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# UNITED STATES PATENT OFFICE

2,212,957

## LOCKING MECHANISM

Fred E. Spradling, St. Louis, Mo.

Application February 28, 1940, Serial No. 321,203

8 Claims. (Cl. 292—92)

This invention relates to locking mechanisms of the kind used on outwardly swinging doors for preventing unauthorized ingress but wherein the locking mechanism may be immediately released for emergency exit by operation of a manipulator, such as a depressible panic bar on the interior side of the door. The invention has for its principal objects to provide for positively locking the panic bar in lock releasing position and for releasably securing said bar in the position assumed thereby in the engaged position of the lock; to provide for the ready attachment of the device to the door and to panic bars of different types; and to provide for simplicity and cheapness of construction and compactness of design. The invention consists in the panic bar locking device and in the construction, combinations and arrangements of parts hereinafter shown and described.

In the accompanying drawings, which form part of this specification and wherein like symbols refer to like parts wherever they occur,

Fig. 1 is a fragmentary interior side view of a swinging door provided with a lock and an emergency or panic bar release therefor, showing the panic bar in lock releasing position and the door equipped with a device embodying my invention for positively locking said bar in such position,

Fig. 2 is a view similar to Fig. 1 showing the position of the parts in the engaged position of the lock,

Fig. 3 is an enlarged view similar to Fig. 1, with the panic bar locking device shown in vertical section on the line 3—3 in Fig. 4,

Figs. 4 and 5 are enlarged views of the door with the parts shown in the positions indicated in Figs. 1 and 2, respectively,

Fig. 6 is a vertical section on the line 6—6 in Fig. 3,

Fig. 7 is a side elevation of the panic bar receiving element of the panic bar locking device,

Fig. 8 is an edge view of the element shown in Fig. 8,

Fig. 9 is a side elevation of the door supported elements of the panic bar locking device; and

Fig. 10 is an edge view of the elements shown in Fig. 9.

In the accompanying drawing my invention is illustrated in connection with the emergency or panic operating means for the locking mechanism of a swinging door. Such locking mechanism usually comprises a mortise type lock 1 mounted on the door 2 flush with the free edge thereof and including a spring projected latching bolt 3 adapted to engage a suitable keeper 4 provided therefore in the adjacent door jamb or other member 5. In accordance with common practice, the latch bolt 3 is retracted from the keeper 4 by emergency means, such as a panic bar 6 that extends transversely of the door on the interior side thereof with its ends rigidly secured to and supported by the free ends of arms 7 that are supported for vertical swinging movement in suitable plates 8 secured flatwise to said side of said door. One of these panic bar supporting arms is located adjacent to the lock 1 and has a finger 9 at its pivoted end adapted, when the panic bar is swung downwardly, to lift a member 10 of the lock mechanism (not shown) and thereby withdraw the latch bolt 3 from the keeper 4. The above described locking mechanism and emergency or panic release therefor are well known and it is considered unnecessary to illustrate them in detail.

In accordance with the present invention, a device is provided for positively locking the panic bar 6 in lock releasing position and for releasably securing said bar in the position assumed thereby when the latch bolt 3 automatically projected into engagement with the keeper 4. Said device comprises a link 11 pivotally connected at one end by means of a horizontal pivot 12 to a suitable supporting bracket or anchor member 13 that is secured flatwise to the interior face of the door 2 by means of screws or other fasteners 14. The other or free end of the link 11 is connected by means of a horizontal pivot bolt 15 to one end of a second link 16 whose opposite end has an opening 17 extending horizontally therethrough parallel to the axes of the pivots 12 and 15 adapted to snugly receive the panic bar 6. A portion of the panic bar receiving opening 17 in the link 16 is defined by a hinged section 18 which, when opened, permits said bar to be received in said opening and, when closed, serves to retain said bar in said opening. The hinged section 18 is secured at one end to the link 16 by a horizontal pivot pin 19 held in closed position by means of a screw 20 which extends through a hole provided therefor in the free end of said section and is threaded into a registering hole provided therefor in said link.

The pivot bolt end of the link 16 has a circular series of holes 21 extending horizontally therethrough concentric to the pivot bolt 15; and the corresponding end of the link 11 is provided with a single horizontal hole 2 adapted to be brought into register with anyone of the circular series of holes 21 in the link 16 when the two links

are rotated relative to each other about the axis of the pivot bolt. The pivotally connected ends of the links 11 and 16 are clamped together in the desired position of relative angular adjustment by means of a wing or thumb nut 23 threaded on the pivot bolt 15 in position to bear against the link 11. The flat-sided head of the pivot bolt seats in a correspondingly shaped recess 24 in the link 16 and thus prevents rotation of said bolt in the two links pivotally connected thereby. The wing nut receiving end of the pivot bolt has a cap 25 riveted thereto beyond the wing nut, so as to prevent unauthorized removal of said nut from said bolt.

The pivot bolt receiving end of the link 11 is provided with a circular series of studs or bosses 26 disposed concentric with the pivot bolt. These studs or bosses are adapted to seat snugly within a corresponding series of recesses or pockets 27 in the opposing or contacting face of the pivot bolt receiving end of the link 16, whereby the two pivotally connected links are adapted to be locked together in different positions of relative angular adjustment when said links are clamped together by the wing nut 23.

By the arrangement described, free ingress and egress may be permitted for normal daytime use of the door by swinging the panic bar 6 downwardly far enough to release the latch bolt 3 and by then tightening the wing nut 23 to thereby lock the two links 11 and 16 in the relative angular positions assumed thereby in such lock releasing position of said panic bar. This tightening of the wing nut clamps together the pivotally connected ends of the link 11 and 16 and causes the bosses 26 on the link 11 to seat in the recesses in the link 16, whereby the two links are firmly interlocked together against relative rotary movement and thereby prevent the panic bar from swinging upwardly to lock releasing position. In this position of the parts, the panic bar is firmly secured in lock releasing position but may be readily released for emergency operation by loosening the thumb nut. To prevent such release, especially in daytime when free entry and exit is desired, the links may be positively locked together against unauthorized release by means of a padlock 28, the shackle 29 of which is passed through the single hole 22 in the link 11 and registering hole of the series of holes 21 in the link 16. At night or other times when the building is closed, the securing device for the panic bar is released whereupon the panic bar swings upwardly and the latch bolt engages the keeper. During this movement of the panic bar the two links move relative to each other about the axis of the latch bolt and accommodate themselves to the raised position of said bar. The panic bar may be then secured in this raised position merely by tightening the thumb nut. In this position of the parts the panic bar is secured against surreptitious operation from the exterior side of the door, while permitting the door to be opened from the inside in case of emergency merely by loosening the thumb nut.

The hereinbefore described panic bar lock has several important advantages. It may be quickly and easily mounted on the door and attached to the panic bar, and is applicable to different panic bar mountings without any alteration thereof. It is also simple and economical and self adjustable and may be utilized to positively lock the panic bar in the lock releasing position thereof and to secure said bar in the position assumed thereby when the locking mechanism is in locking position.

Obviously, the construction hereinbefore described admits of considerable modification without departing from the invention. Therefore, I do not wish to be limited to the arrangement shown and described.

What I claim is:

1. Securing means for door lock panic bars comprising a link adapted at one end for pivotal connection with the door, a second link having one end pivotally secured to the outer end of said first mentioned link and adapted at its other end for pivotal connection with said panic bar, and means for securing said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position.

2. Securing means for door lock panic bars comprising a link adapted at one end for pivotal connection with the door, a second link having one end pivotally secured to the outer end of said first mentioned link and adapted at its other end for pivotal connection with said panic bar, the pivotal connection between said links comprising a pivot extending therethrough, and means adjustably engaging said pivot for clamping said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position.

3. Securing means for door lock panic bars comprising a link, an anchor member for pivotally supporting one end of said link, said anchor member being adapted to be secured to the door, a second link having one end pivotally secured to the outer end of said first mentioned link and adapted at its other end for pivotal connection with said panic bar, the pivotal connection between said links comprising a bolt extending therethrough, and a nut threaded on said bolt for clamping said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position.

4. Securing means for door lock panic bars comprising a link adapted at one end for pivotal connection with the door, a second link having one end pivotally secured to the outer end of said first mentioned link and adapted at its other end for pivotal connection with said panic bar, the pivotal connection between said links comprising a pivot extending therethrough, means adjustably engaging said pivot for clamping said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position, and means for preventing the removal of said clamping means from said pivot.

5. Securing means for door lock panic bars comprising a link, an anchor member for pivotally supporting one end of said link, said anchor member being adapted to be secured to the door, a second link having one end pivotally secured to the outer end of said first mentioned link and adapted at its other end for pivotal connection with said panic bar, the pivotal connection between said links comprising a bolt extending therethrough, a thumb nut threaded on said bolt for clamping said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position, and a cap permanently secured to the nut receiving end of said bolt for preventing the removal of said thumb nut from said bolt.

6. Securing means for door lock panic bars comprising a link adapted at one end for pivotal connection with the door, a second link having one end pivotally secured to the outer end of

said first mentioned link and adapted at its other end for pivotal connection with said panic bar, the pivotal connection between said links comprising a pivot extending therethrough, means adjustably engaging said pivot for clamping said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position, and a separate detachable locking device for positively locking said links together against relative movement.

7. Securing means for door lock panic bars comprising a link adapted at one end for pivotal connection with the door, a second link having one end pivotally secured to the outer end of said first mentioned link and adapted at its other end for pivotal connection with said panic bar, the pivotal connection between said links comprising a pivot extending therethrough, and means adjustably engaging said pivot for clamping said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position, said pivotally connected ends of said links having registering holes therein adapted to receive the shackle element of a padlock.

8. Securing means for door lock panic bars of the swinging type comprising a link adapted at one end for pivotal connection with a door, a second link having one end pivotally secured to the other end of said first mentioned link and having an opening at its other end through which said panic bar is adapted to extend, said second link having a hinged section defining a portion of said opening and adapted when opened to permit entry and removal of said bar from said opening, means for securing said section in closed position, and means for securing said links together to prevent relative swinging movement thereof to thereby hold said panic bar in desired position of its swinging movement.

FRED E. SPRADLING.