Sept. 13, 1966 N. A. WELCH 3,271,982

DOOR LOCK

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Fig. 1.

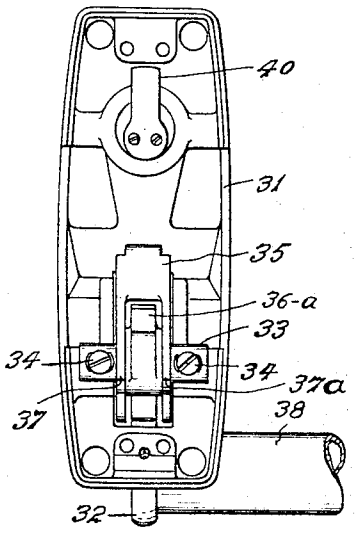


Fig. 2.

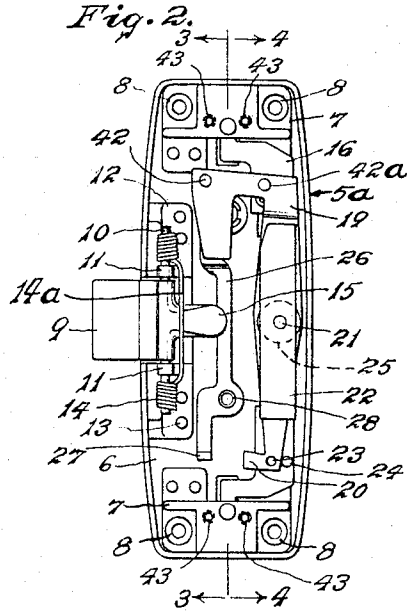


Fig. 3.

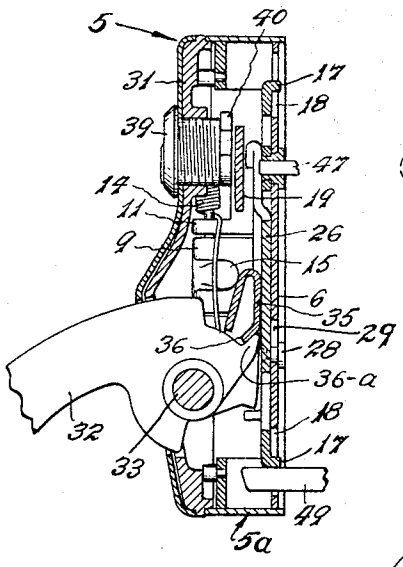
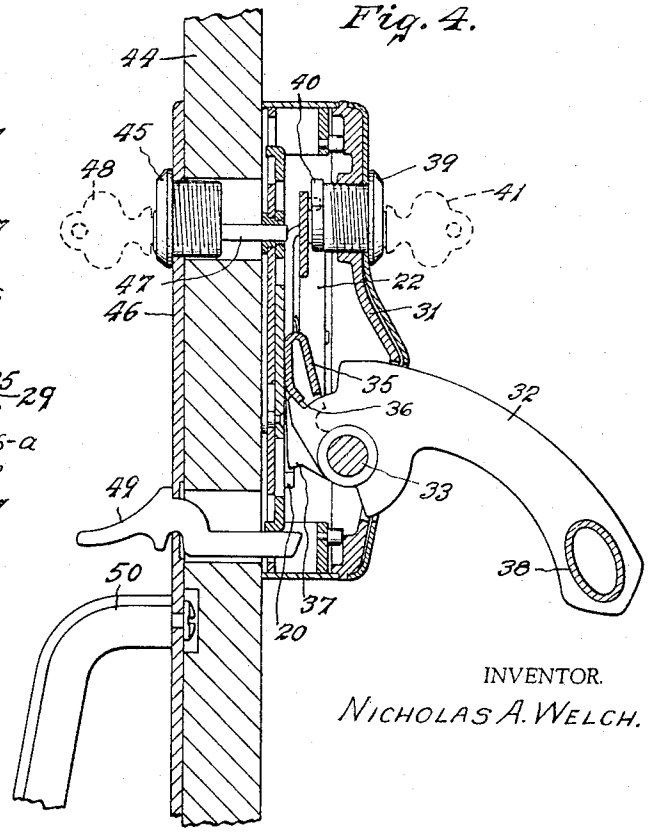


Fig. 4.



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Fig. 5.

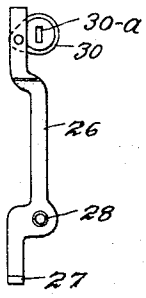


Fig. 6.

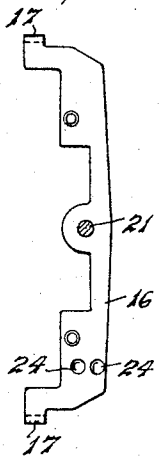


Fig. 7.

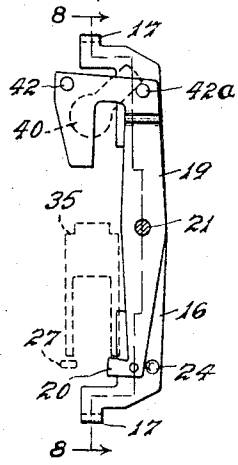


Fig. 8.

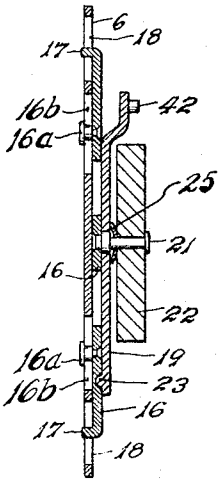
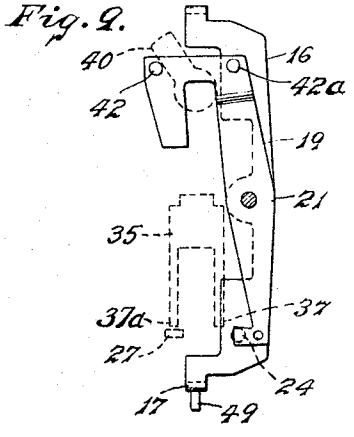


Fig. 9.



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3,271,982

DOOR LOCK

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Filed Aug. 14, 1964, Ser. No. 389,571
7 Claims. (Cl. 70—92)

This invention relates to a door lock of the emergency-exit type and more particularly to a modified form of the emergency-exit lock disclosed in my copending application Ser. No. 389,108, filed Aug. 12, 1964, and now abandoned.

The principal object of this invention is to provide a novel mechanism for the active case of the emergency-exit lock disclosed in my aforementioned copending application which permits retraction of the latchbolt at all times from the inner side of the door by operation of the panic-bar; retraction of the latchbolt from the outer side of the door by a knob, thumbpiece or key operated lock cylinder and selective disablement of the knob or thumbpiece by a key operated lock cylinder from the inside of the door.

A further object of the invention is to provide a modified active case mechanism which may be used with most of the other components of the emergency-exit lock described in my prior application, thereby materially reducing the cost of manufacture of this particular function.

The foregoing and other objects and advantages of the present invention will be more clearly understood from the following description and the accompanying drawings in which:

FIG. 1 is an elevational rear view of the operating unit for the active case of the emergency-exit lock of the present invention.

FIG. 2 is an elevational front view illustrating the base section of the active case and the novel mechanism provided by this invention.

FIG. 3 is a sectional side view of the fully assembled active case taken on line 3—3 of FIG. 2.

FIG. 4 is a sectional side view of the active case, on line 4—4 of FIG. 2, showing same mounted on a door having a thumbpiece and a lock cylinder on the outer side thereof operatively engaged with the active case mechanism.

FIG. 5 is an elevational front view of the crank lever and pull link of said mechanism.

FIG. 6 is an elevational front view of the slide bar employed in the present mechanism.

FIG. 7 is an elevational front view of the slide bar and rocker member assembly employed in the mechanism showing the rocker member in its effective or operative position.

FIG. 8 is a sectional side view of said assembly taken substantially on line 8—8 of FIG. 7.

FIG. 9 is a view similar to FIG. 7, but showing the rocker member in its ineffective or inoperative position.

As hereinbefore indicated, the mechanism provided by this invention has been designed for use in the active case of the emergency-exit lock shown and described in my above-identified copending application. For that reason, only those components of said lock which are germane to this invention have been illustrated in the annexed drawing and will be described in detail herein. It should be pointed out, however, that because of the particular nature of the present mechanism, the emergency-exit lock containing same is "handed"; that is, the base sections of the active and inactive cases cannot be reversed relatively to the case-cover and panic-bar assembly as in my previously disclosed device.

Referring now to the drawings, the emergency-exit lock of the present invention includes an active case 5 having

a base section 5*a* which contains the lock mechanism. Said base section includes an elongated base plate 6 having brackets 7—7 secured thereto adjacent its upper and lower ends, each with screw holes 8—8 therein to receive screws for fastening the said base section to a door.

The lock mechanism in the active case includes a latchbolt 9 that is pivotally mounted on a pin 10 extending through bosses 11—11 on a supporting bracket 12 that is secured to the base plate 6 by rivets 13. The opposite ends of the pin 10 extend beyond the bosses 11—11 and support the coils of a spring 14. Said spring has a bridge portion 14*a* extending between said coils and engaging a tail 15 extending laterally inwardly from the latchbolt. Each of said coil portions has a leg, not shown, resting against the bracket 12 to anchor the spring so that the bridge portion will bias the latchbolt toward projected, or latching, position.

The said mechanism further includes a slide bar 16 which is longitudinally slidably mounted on the base plate 6 by means of studs 16*a*—16*a* which are affixed to said slide bar and extend through longitudinal slots 16*b*—16*b* in said base plate. The opposite ends of said slide bar have abutments 17—17 extending rearwardly therefrom through longitudinally extending slots 18—18 in said base plate for a purpose to be described.

A rocker member 19 having a hook portion 20 at its lower end is pivotally mounted on said slide bar by means of a post 21 extending centrally through said rocker member, and a weight 22 is also mounted on said slide bar by the said post to gravitally bias the entire assembly downwardly. The rocker member 19 is retained in either of two selected positions relatively to the slide bar 16 by a projection 23 which is urged into the respective one of a pair of recesses 24—24 in the slide bar by a spring washer 25 that is provided on the post 21 between the bottom of the weight 22 and the rocker member and biases the said rocker member toward the slide bar.

A pull link 26 having a hook portion 27 at its lower end is longitudinally slidably mounted on the base plate 6 by means of a stud 28 which extends through a longitudinal slot 29 in the base plate. Said pull link is pivotally connected at its upper end to a crank lever 30 which is rotatably mounted in the base plate and has a slot 30*a* therethrough to receive the operating bar of a lock cylinder as will be hereinafter described.

The operating unit illustrated in FIG. 1 includes a supporting cover 31 which has an operating lever 32 pivotally mounted thereon by means of a shaft 33 that is secured to the said supporting cover by screws 34—34. A U-shaped operating finger 35 straddles the operating lever and is also pivotally mounted on the said shaft 33. Said finger has an abutment 36 thereon which is engaged by a projection 36*a* on the lever 32 so that said lever can move the operating finger in one direction. The lower portion of said operating finger is provided with abutments 37 and 37*a* at opposite sides thereof which are engageable by the hook portions 20 and 27 of the rocker member and pull link, respectively. A panic-bar 38 is secured at one end to the operating lever 32 and at its opposite end to an identical operating lever forming part of the operating unit for the inactive case of the lock. Since said inactive case is identical to the inactive case shown and described in my aforesaid application, it has not been illustrated herein, it being sufficient to state that said inactive case contains a spring which, acting through the operating finger and the operating lever thereon, biases the panic-bar and the levers into normal, raised position as illustrated in FIGS. 3 and 4 of the annexed drawing.

The supporting cover 31 also carries a conventional lock cylinder 39 that is threaded into a threaded opening in said cover, as shown in FIGS. 3 and 4. Said lock cylin-

der includes the usual key plug and said key plug has a cam **40** affixed to the inner end thereof which, upon rotation of the key plug by the proper key **41**, is adapted to engage one or the other of a pair of spaced studs **42** and **42***a* projecting from the rocker member **19** for rocking said rocker member into or out of its effective position.

The said base section of the active case is mounted on the inner side of the door, as shown in FIG. 4, and is secured thereto with screws, not shown, which extend through the holes **8—8** in the brackets **7—7**. After said section has been mounted on the door, the operating unit is assembled thereto by inserting the end of the operating finger **35** under the tail **15** of the latchbolt and then fastening the supporting cover **31** to the base section by screws, not shown, which are threaded into holes **43—43** on the brackets **7—7**. It will be noted that, when the operating unit is in position upon the lock, the cam **40** is disposed between the studs **42—42** of the rocker **19**.

In order to permit retraction of the latchbolt from the outer side of the door, there is provided a separate lock cylinder **45** that is mounted in an escutcheon **46**. Said lock cylinder has an operating bar **47** affixed to the key plug thereof and extending through the slot **30***a* in the crank lever **30** so that said crank lever can be rotated by a key **48** inserted into the key plug of the cylinder **45**.

In addition to the cylinder **45**, there is also provided on the outer side of the door a manually operable thumbpiece **49** which is pivoted in the escutcheon **46** and is associated with a suitable pull handle **50**. The said thumbpiece extends through the door and the lower slot **18** in the base plate **6** and has its inner end disposed under the lower abutment **17** of the slide bar **16**, as clearly shown in FIGS. 3 and 4.

From the foregoing, it will be evident that the latchbolt can be retracted at all times by depressing the panic-bar **38**. This causes the operating finger **35** to actuate the tail **15** of the latchbolt and thereby swing said latchbolt about the pin **10** to its retracted position. The said latchbolt can also be retracted at all times from the outside of the door by means of the key **48** which, when rotated in a counterclockwise direction, will rotate the crank lever **30** and raise the pull link **26** so that the hook portion **27** thereof will engage the respective abutment **37***a* on the operating finger **35** and pivot said finger about the shaft **33**, independently of the lever **32**, to cause retraction of the bolt in the same manner as when the panic-bar is depressed.

When the rocker member **19** is in its effective or operative position, as shown in FIGS. 2 and 7, wherein the hook portion **20** thereon is in register with the abutment **37** on the operating finger **35**, the latchbolt may be retracted by operation of the thumbpiece **49**. When the thumbpiece is pressed downwardly at its outer end, the inner end thereof will raise the slide bar **16** and cause the hook portion **20** of the rocker member **19** to engage the respective abutment **37** on the operating finger **35** and swing the finger about its pivot to thereby retract the latchbolt in the same manner as previously described. However, retraction of the latchbolt by operation of the said thumbpiece **49** may be prevented when desired by inserting the key **41** into the cylinder **39** and rotating said key in a counterclockwise direction. This will rotate the cam **40** into engagement with the stud **42** on the rocker member, as clearly illustrated in FIG. 9, and rock the rocker member **19** to the position shown wherein the hook portion **20** on said rocker member will be out of register with the respective abutment **37** of the operating finger **35**. Hence, when the slide bar **16** is raised by operation of the thumbpiece **49**, the hook portion **20** will not engage the said abutment **37** and operation of the thumbpiece will thereby be rendered ineffective for retracting the latchbolt. The rocker member may be returned to its effective or operative position by simply rotating the key **41** in the opposite direction to cause the cam **40** to engage the stud **42***a*, as shown in FIG. 7. In each instance, the lost motion provided between the cam and the studs permits the key plug to be returned to its normal position and the key withdrawn so that the position of the rocker member cannot be changed except by an authorized person possessing the proper key.

It will be understood from the above description that, by my invention, I have provided an emergency-exit lock which at all times permits retraction of the latchbolt from the inner side of the door by depression of the panic-bar and from the outer side of the door by means of a key, and that said latchbolt may also be retracted from the outer side of the door by means of a manually operable member, such as a thumbpiece, which may be rendered inoperable from the inner side of the door by means of a key. My invention therefore provides for selectively rendering the said lock manually operable from the outer side of the door or preventing such manual operation thereof, when desired, while still permitting key operation of said lock from the outer side and panic-bar operation thereof from the inner side of the door at all times.

While I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention which is not to be limited to the details disclosed herein, but is to be accorded the full scope of the claims appended hereto so as to embrace any and all equivalent structures.

I claim:

1. An emergency-exit lock including an active case comprising a base section, a latchbolt pivotally mounted on said base section and normally biased towards latching position outwardly of said section, said latchbolt having a tail thereon, a supporting cover on said base section, an operating lever pivotally mounted on a shaft on said cover, a panic-bar secured to said operating lever, an operating finger pivotally mounted on said shaft and engageable with said tail on the latchbolt, an abutment between said operating lever and said operating finger for rocking said finger about said shaft to retract the latchbolt upon operation of said panic-bar, the said operating finger having an abutment thereon, a slidable member on said base, a rocker member carried by said slidable member and having a hook portion thereon, said rocker member being adjustable to locate the hook portion thereon in or out of register with the abutment on said operating finger, manually operable means for operating said slidable member to engage the hook portion on the rocker member with the abutment on the operating finger and thereby rock said operating finger to cause retraction of the latchbolt independently of the panic-bar, and separate means for adjusting said rocker member to render said manually operable means inoperable.

2. An emergency-exit lock as set forth in claim **1** wherein the said separate means are key controlled.

3. For a door, an emergency-exit lock including an active case adapted to be mounted on the inside of the door and including a base section, a latchbolt pivotally mounted on said base section and normally biased towards latching position outwardly of said section, said latchbolt having a tail thereon, a supporting cover for said base section, an operating lever pivotally mounted on a shaft on said cover, a panic-bar secured to said lever, an operating finger pivotally mounted on said shaft and engageable with said tail to retract the latchboat, an abutment between said operating lever and operating finger for rocking said operating finger about said shaft to effect panic-bar retraction of said latchbolt, the said operating finger having an abutment thereon, a key controlled pull link having hook portion thereon engageable with the said abutment on said operating finger for moving said operating finger to retract the latchbolt independently of the panic-bar, a separate abutment on said

operating finger, a slide bar moveable on said base, a rocker member pivotally mounted on said slide bar and having a hook portion thereon, said rocker member being adjustable to locate the hook portion thereon in and out of register with said separate abutment, a member manually operable from the outer side of said door for moving said slide bar to cause engagement of the hook portion on the rocker member with the separate abutment on the operating finger to thereby retract the latchbolt independently of the panic-bar, and separate means operable from the inner side of said door for shifting the said rocker member to locate the hook portion thereon out of register with the said separate abutment and thereby render said manually operable means inoperable.

4. The subject matter set forth in claim 3 wherein said separate means are key controlled.

5. An emergency-exit lock including a base section, a latchbolt pivotally carried by said base section and normally biased toward latching position outwardly of said section, said latchbolt having a tail thereon, a cover for said base section, an operating lever pivotally mounted on a shaft carried by said cover, a panic-bar secured to said lever, an operating finger pivotally mounted on said shaft and engageable with said tail to effect retraction of the latchbolt, an abutment between said operating lever and said opertaing finger for rocking said operating finger about said shaft for panic-bar retraction of said latchbolt, the said operating finger having an abutment thereon, a key operable crank lever rotatably carried by said base section, a pull link connected to said crank lever, a hook portion on said pull link engageable with the abutment on the operating finger whereby key operation of said pull link by the crank lever will rock said operating finger and cause retraction of the latchbolt, a slide bar slidable on said base, a rocker member pivotally mounted on said slide bar and having a hook portion thereon engageable with a separate abutment on the operating finger, said rocker member being moveable to locate the hook portion thereon in and out of register with the separate abutment on the operating finger, a manually operable member for moving said slide bar to cause engagement of the said hook portion on the rocker member with said separate abutment when said hook portion and said separate abutment are in register and thereby cause retraction of the latchbolt, and separate means for adjusting said rocker member to locate the hook portion thereon out of register with said separate abutment on the operating finger to thereby render the manually operable member inoperable for retracting the latchbolt.

6. In an emergency exit lock, a case adapted to be mounted on the inner side of a door, a latchbolt mounted in said case for movement between projected and retracted positions, an operating lever pivotally mounted on said case, retracting means in said case operable by and upon actuation of said operating lever to retract said latchbolt, means in said case adapted for manual actuation from the outer side of the door to retract said latchbolt, said last mentioned means including a moveable supporting member, an intermediate member mounted on said supporting member, said intermediate member being moveable relatively to said supporting member into and out of position wherein it is adapted to operate said retracting means upon actuation of said supporting member to effect retracting actuation of said latchbolt, and separate manually operable means on said case accessible from the inner side of the door for shifting said intermediate member into and out of said position.

7. In an emergency exit lock, a case adapted to be mounted on the inner side of a door, a latchbolt pivotally mounted in said case for movement between projected and retracted positions, an operating finger pivotally mounted on said case for retracting said latchbolt, an operating lever pivotally mounted on said case for moving said finger to retract said latchbolt, a slide bar slidably mounted in said case, a rocker member carried by said slide bar and having a hook portion thereon, an abutment on said operating finger opposed to said hook portion, said rocker member being moveable relatively to said slide bar to locate the hook portion thereon in or out of register with said abutment, manually operable means for operating said slide bar to engage the hook portion on the rocker member with the abutment on the operating finger and thereby move said operating finger about its pivot to effect retracting actuation of said latchbolt independently of said operating lever, and separate manually operable means on said case accessible from the inner side of the door for moving said rocker member between its operative and inoperative positions.

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