H. W. DYER,

EXIT DOOR LOCK.

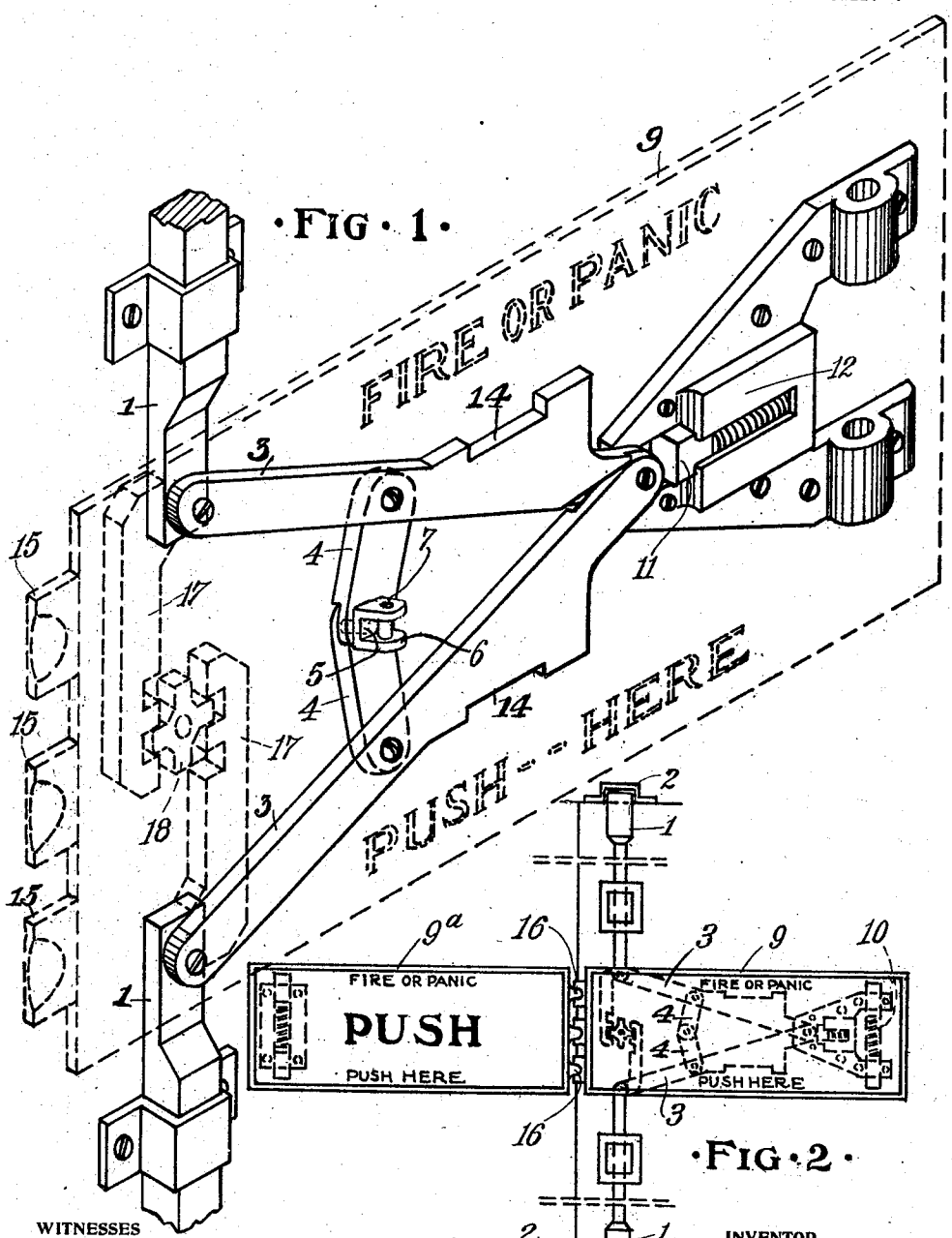
APPLICATION FILED APR. 29, 1911.

1,180,024.

Patented Apr. 18, 1916.

2 SHEETS—SHEET 1.

·FIG·1·







·FIG·2·

WITNESSES

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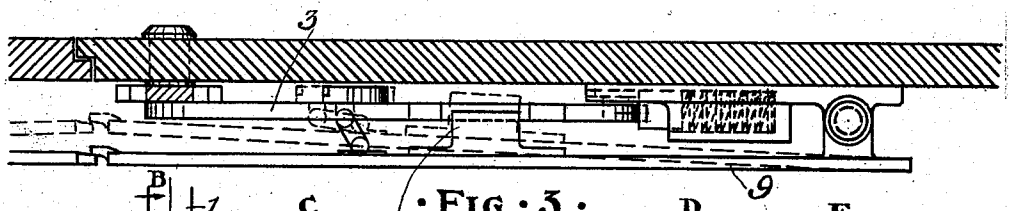



FIG. 3.

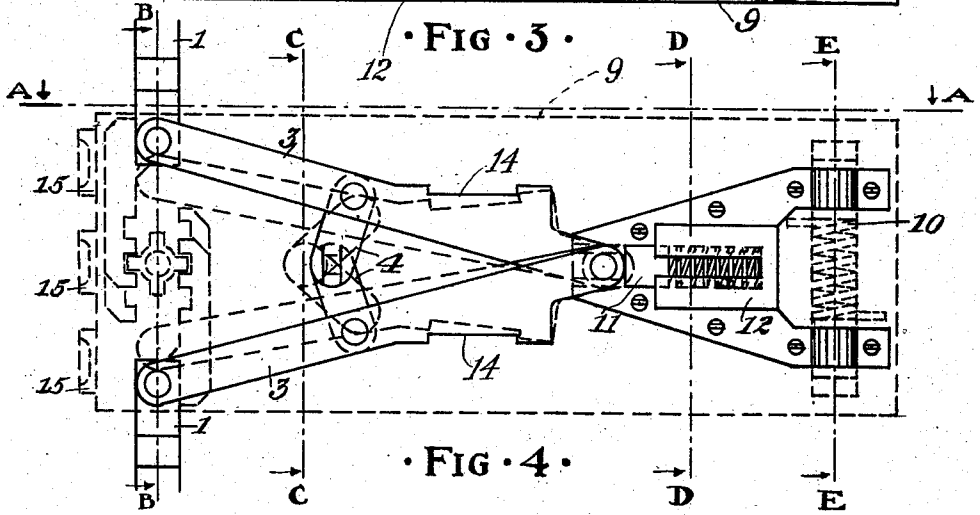



FIG. 4.

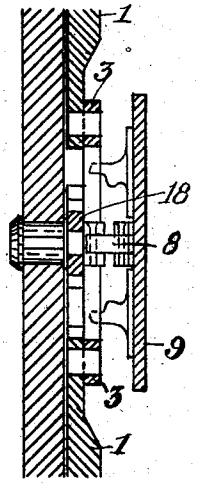



FIG. 5.

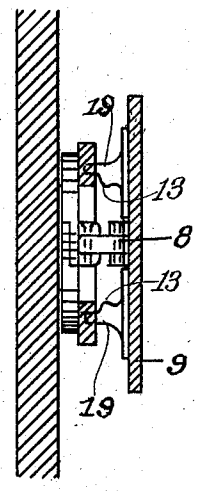



FIG. 6.

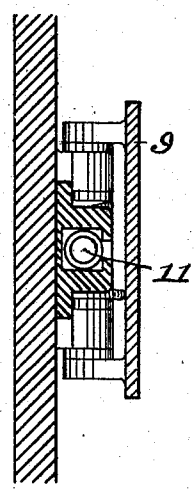



FIG. 7.

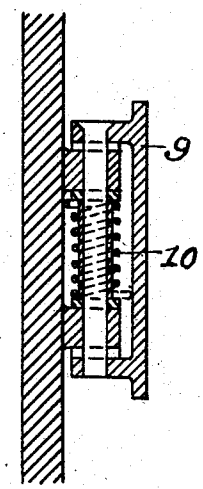



FIG. 8.

WITNESSES

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# UNITED STATES PATENT OFFICE.

HARRY W. DYER, OF EAST ORANGE, NEW JERSEY.

## EXIT-DOOR LOCK.

1,180,024. Specification of Letters Patent. Patented Apr. 18, 1916.

Application filed April 29, 1911. Serial No 624,155.

*To all whom it may concern:*

Be it known that I, HARRY W. DYER, a citizen of the United States, residing in East Orange, county of Essex, and State of New Jersey, with post-office address at No. 30 Midland avenue, have invented certain Exit-Door Locks, of which the following is a specification.

This invention relates to exit door locks, by which terms are designated door locks arranged to prevent ingress unless the lock is unfastened with a key and to permit automatic opening in case of panic.

The primary object of the invention is to provide a simple and reliable locking device for doors in places of assembly, which will normally be kept locked so that entrance through the doors will be prevented, but which will not impose any obstacle to the rapid exit in case of fire or panic.

In the accompanying drawings, I have illustrated a typical embodiment of my invention, and it will be understood that variations in the form and mode of assembly of the parts may be made without departing from the spirit of the invention or sacrificing the advantages of construction.

In the drawings in which corresponding parts are designated by similar characters of reference throughout: Figure 1 is a perspective view in solid lines of the mechanism, by which the lock is automatically released when pressure is brought against the door in case of panic; the cover for this mechanism and the means for releasing the lock by means of a key being indicated in broken lines. Fig. 2 is a diagrammatic view, showing the locking devices complete in association with the lock releasing mechanism. Fig. 3 is a horizontal section through a door equipped with the lock releasing devices, on the line A—A of Fig. 4, looking in the direction of the arrows. Fig. 4 is a diagrammatic view, showing the positions of the lock releasing members when the lock is closed and when it is open. Figs. 5, 6, 7 and 8 are sectional views on section lines B B, C C, D D and E E, respectively, of Fig. 4, looking in the direction of the arrows.

The invention is illustrated as applied to a double door, the two leaves or door sections of which were intended to open outwardly in response to pressure against their inner faces.

The lock is preferably provided with two bolts, 1, 1, arranged vertically and engaging the door frame at top and bottom, as best shown in Fig. 2. These bolts 1—1 work in suitable guides, as shown, and engage sockets 2—2 in the door frame. At their adjacent ends, the bolts 1—1 are pivotally connected with a pair of hinged arms 3—3. These arms 3—3 are connected by a toggle joint consisting of links 4—4, which turn on a pivot pin 5 provided with a head 6 in the form of a yoke. A pin 7 extends across this yoke and carries a link 8. The link 8 is pivoted to the plate 9 which extends transversely across the door section bearing the bolts 1. This plate 9 is hinged at the extremity adjacent to the hinged margin of the door section, a spring 10 being preferably provided on the hinge to hold the plate normally in the position shown in solid lines in Fig. 3. The arms 3 are held apart by the action of the spring pressed block 11 arranged to slide in the guideway 12 mounted on the door section behind the pressure plate 9. This spring-pressed block 11 acts against the inner pivoted ends of the arms 3, and by reason of the outer ends of said arms being pivoted to the bolts 1, forces said bolts outwardly into their locking position.

To supplement the action of the link 8 upon the toggle members 4 I provide a pair of lugs 19 on the back of the pressure plate 9. A cross-sectional form of these lugs is best seen in Figs. 5 and 6, in which figures they are shown in normal position. When pressure is applied to the plate 9 however, these lugs are forced toward the door section and the beveled shoulders 13 engage the recesses 14 in the arms 3 and force them into the position shown in dotted lines in Fig. 4, releasing the bolts 1 from their sockets.

It will be noted that the plate 9 is provided at its free end with a plurality of extensions 15 each of which is preferably formed with a shallow recess on its outer surface. These recesses coact with tongues 16 formed on a plate $9^a$ similar to plate 9 already described but mounted on the other door section in the same manner. The purpose of these engaging tongues and extensions is to insure action of the mechanism for unlocking the doors when pressure is applied to pressure plate on either door section. The tongues 16 overlap the extensions 15 so that pressure on the plate $9^a$ will be equally as effective as pressure on plate 9 to operate the bolt releasing mechanism. In

order to facilitate the opening of the door from the outside when necessary each bolt 1 is provided with a notched extension 17 constituting in effect a short rack. These extensions 17 overlap each other and the notches are arranged on the inner faces of the extension so that the cross or four-toothed gear 18 arranged between them will engage the notches in both extensions simultaneously. This cross 18 is rotatively mounted and is adapted to be operated with a key from the outside of the door, like an ordinary lock.

The operation of the exit lock will be easily understood without further description. Pressure against the plate 9 will cause a double action upon the bolt actuating arms 3 through the toggle arms 4 and the lugs 12 carried by the pressure plate. This action will force the arms 3 together thus retracting locking bolts and leaving the door free to swing open. As soon as the door is opened and the pressure on plate 9 is released the spring pressed block 11 will act upon the arms 3 and force them back into normal position thus forcing the bolts 1 outward into locking position again.

Having thus described my invention, what I claim is new and desire to secure by Letters Patent, is;

1. In an exit door lock, a pair of opposite bolts, a lever for each of said bolts, said levers having a common fulcrum, a pair of toggle links connecting said levers intermediate said bolts and their fulcrum, an operating plate pivoted to said door and operating said toggle links to withdraw said bolts.

2. In a door lock, the combination of a door, a pair of locking bolts therefor, levers fulcrumed on said door and pivoted directly to the bolts for operating the same, a pressure plate connected to said door, toggle levers, pivoted to said bolt-operating levers and having a pivoted link connected with said pressure plate whereby when pressure is applied against the outside of said plate the bolts will be retracted, means for automatically restoring the pressure plate to normal position, and spring-pressed means for protracting the bolts when the pressure plate is returned to normal position.

3. In a door lock, the combination of a door, a locking bolt therefor, a recessed lever pivotally connected to the bolt for operating the same, a pressure plate connected to said door, a lug on the pressure plate which coacts with said recessed lever to retract the bolt when pressure is applied against the outside of the pressure plate.

4. In a door lock, the combination of a door, a locking bolt therefor, a recessed lever pivotally connected to the bolt for operating the same, a pressure plate connected to said door, a lug on said pressure plate adapted to coact with said recessed lever, and a lever pivoted to said bolt-operating lever and having a link connection with said pressure plate whereby when pressure is applied against the outside of said plate the bolt will be retracted.

In testimony whereof I have signed my name hereto in the presence of witnesses.

HARRY W. DYER.

Witnesses:
BAXTER MORTON,
ADOLPH M. WEISS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."