

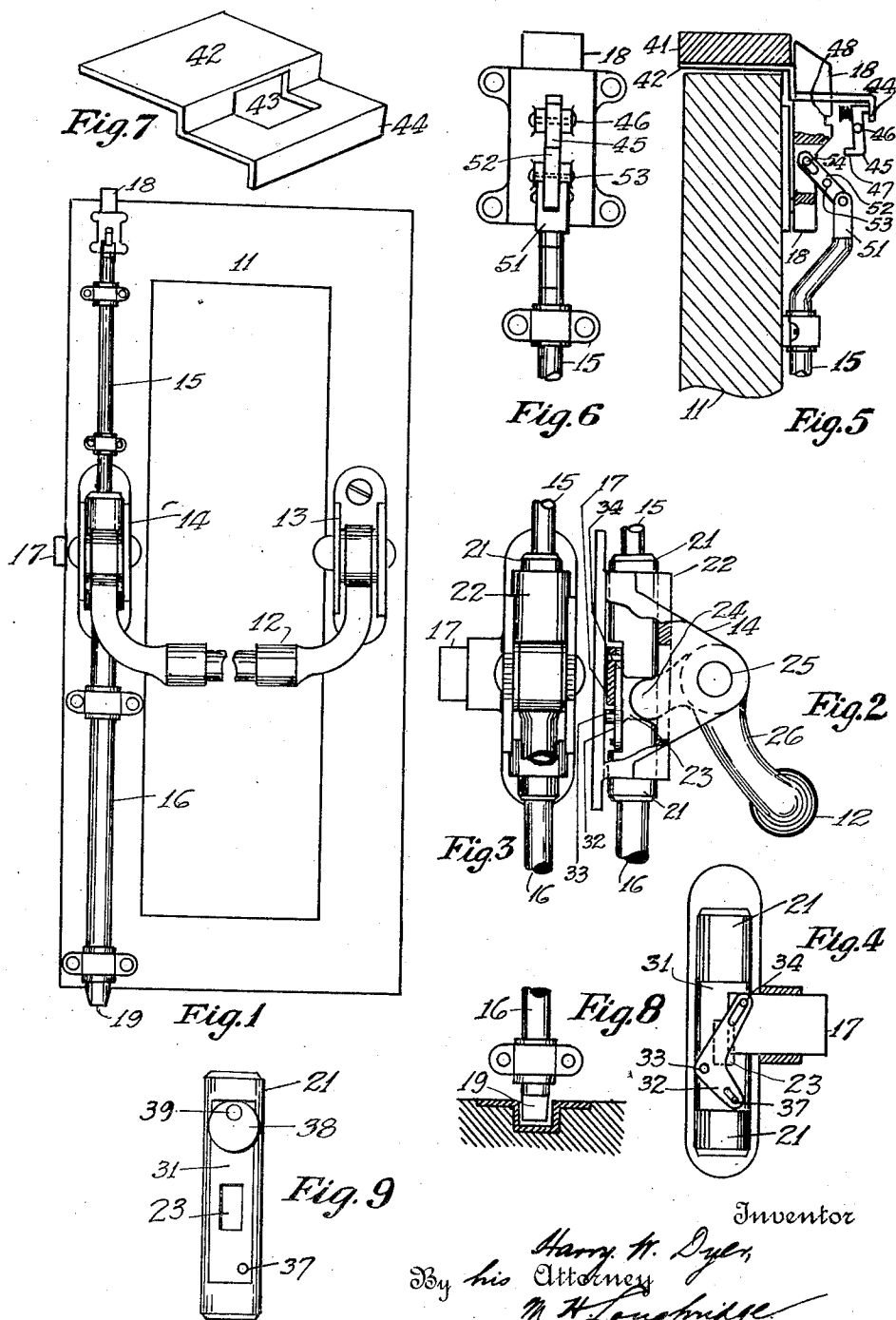
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H. W. DYER

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DOOR LOCK

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Inventor

Harry W. Dyer
By his Attorney
M. H. Loughbridge

UNITED STATES PATENT OFFICE.

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

DOOR LOCK.

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To all whom it may concern:

Be it known that I, HARRY W. DYER, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Door Locks, of which the following is a specification.

This invention relates to door locks and more particularly to a type of door lock known in the trade as an exit door lock or panic door lock, arranged so that pressure on a horizontal bar across the centre of the door on the inside will release the latches and permit the door to open. The principles of this invention, however, may be used with any type of door lock and are not confined to the panic type as above referred to. This lock may be constructed as a one-way, two-way or three-way lock without change or departure from the principles of the invention, the objects of which are to provide a lock of this kind which is simply constructed with very few moving parts and, therefore, is comparatively inexpensive and not likely to get out of order. Another feature of this lock resides in the fact that its operation does not depend upon springs of any kind. These and other objects will be understood form the following specification and the accompanying drawings in which Fig. 1 shows the application of my invention to a door, Figs. 2, 3 and 4 show the details of the operating mechanism, Figs. 5, 6 and 7 show the details of the latching mechanism at the top of the door, the covering being removed from Fig. 5, Fig. 8 shows the details of the latching mechanism at the foot of the door and Fig. 9 shows an arrangement that may be used for unlatching the door from the outside.

In the drawings 11 represents a door in outline to which my invention is applied, including the horizontal bar 12, pivoted to the brackets 13 and 14 and arranged to operate the vertical rods 15 and 16, controlling the bolts 17, 18 and 19.

The details of the operating mechanism will be understood by a study of Figs. 2 and 3, from which it will be noted that the rod 15 is secured to the top of a cylindrical plunger 21 and the rod 16 is secured to the bottom of this plunger so that the rods 15, 16 and the plunger 21 move together as an integral part. The plunger 21 moves in a circular opening in frame 22 and is provided

with a slot 23 indicated in Fig. 4 which is engaged by the dog 24, moving integral with the arm 26, pivoted at 25 in the bracket 14 and controlled by the horizontal bar 12. It will be noted that when the bar 12 is forced inward, dog 24 raises the plunger 21 and thereby raises rods 15 and 16. When the pressure on the horizontal bar 12 is released the weight of rods 15 and 16 restores the plunger 21 and the horizontal bar to their normal positions. For this purpose rod 16 may be enlarged to give sufficient weight for operating the mechanism. The rod 16 releases the bolt 19 when raised from a socket in the floor as indicated in Fig. 8 and the upward movement of rod 15 releases bolt 18 at the top of the door in a manner hereafter to be described.

The side bolt 17 is operated by a motion plate as indicated in Figs. 2 and 4. When the plunger 21 is raised pin 37 on this plunger engaging the slotted opening in the lower end of motion plate 32 which is pivoted at 33 to the frame, moves the upper end back, which by a slotted opening engages pin 34 secured to the bolt 17 and thereby moves this bolt inward as the plunger is raised and moves it outward when the plunger is lowered.

The latching mechanism at the top of the door as illustrated in Figs. 5, 6 and 7 contains the novel feature of reversing the direction of movement of the locking bolt relative to the operating rod so that as the rod is raised the bolt is withdrawn and as the rod is lowered the bolt is brought into the latching position. This enables the operating rod to move in the same direction as the operating rod for the lower bolt and, therefore, can move integral therewith. Further, it enables the weight of the operating rod to be used as a means for applying a bias to the latch bolts, holding them in the latching position. A means is provided also, whereby when this latch is withdrawn and the door is opened, it is latched in the released position and thereby holds the other bolts in the released position. As soon, however, as the door is closed, this latch is removed and the bolts take up the latching position again.

Referring to the drawings, Fig. 7 shows a sheet metal plate 42 that may be used on the door jamb having an aperture 43 through which the bolt 18 passes, also a turned-over ledge 44 which engages the projecting end

of the lever 45, pivoted at 46 to the cover of the bolt as shown in Fig. 6. The bolt 18 has a notch 48 which registers with the dog 47 in lever 45 when the bolt is withdrawn and if the door is opened a spring forces this end of lever 45 inward, causing this dog to latch the bolt in the released position, where it remains while the door is opened and thus prevents the bolts of the latches from dragging or obstructing the free operation of the door. As soon as the door is closed the projecting end of 45 engages the latch 44, thereby withdrawing the latching member and permitting the bolt to assume the locking position.

It will be noted that the rod 15 is provided with a jaw 51 engaging the end of lever 52 pivoted at 53 in the cover of the bolt as shown in Fig. 6 and the opposite end of this lever by a slotted connection engages pin 54 in the bolt 18. This lever serves to reverse the direction of movement of the bolt relative to rod 15 so that as the rod moves downward the bolt is projected and as the rod moves upward the bolt is withdrawn and the action of rod 15 in releasing the bolt is similar to the action of rod 16.

When it is desired to release this lock from the outside of the door the section 31 of plunger 21 is extended as indicated in Fig. 9 and eccentric 38 operates in this section pivoted on shaft 39 so that as the shaft is rotated the plunger is raised to release the bolts. Shaft 39 may be connected with the knob on the outside of the door or with a cylindrical lock as desired.

When a one-way lock only is used controlling the side bolt on the door, in this case there would not be sufficient weight in the operating mechanism to restore the releasing bar 12 and a compression spring may be applied on the end of plunger 21 which will tend to hold it in the down position

and which is not shown on the drawing as this is an elementary detail admitting of a variety of applications.

In the construction of this lock it should be noted that the mechanism is arranged to operate the bolts at the top and bottom of the door as a primary function and the side bolt is operated as a secondary function through a motion plate which is contrary to the practice heretofore adopted in locks of this kind, but secures a direct action with the most elementary type of construction.

Having thus described my invention, I claim:

1. In a door lock of the class described, the combination of a vertical sliding bolt at the top and bottom of said door, a rod with an enlarged cylindrical section connecting said sliding bolts, a cylindrical casting for housing said section secured to said door, a side bolt for said door, a flat side formed on said enlarged section, a motion plate operatively connected with said flat side and arranged to operate said side bolt, said motion plate being enclosed by said cylindrical casting.

2. In a door lock of the class described, the combination of a vertical sliding bolt at the top and bottom of said door, a rod connecting said sliding bolts, a side bolt for said door, an enlarged cylindrical section on said vertical rod having an aperture receiving an operating member, and having a flat recessed side, a motion plate and the end of said side bolt working in the plane of said recess, said motion plate operatively connected with said enlarged section and arranged to operate said side bolt.

Signed at New York city, in the county of New York, and State of New York, this 19th day of May, A. D. 1922.

HARRY W. DYER.