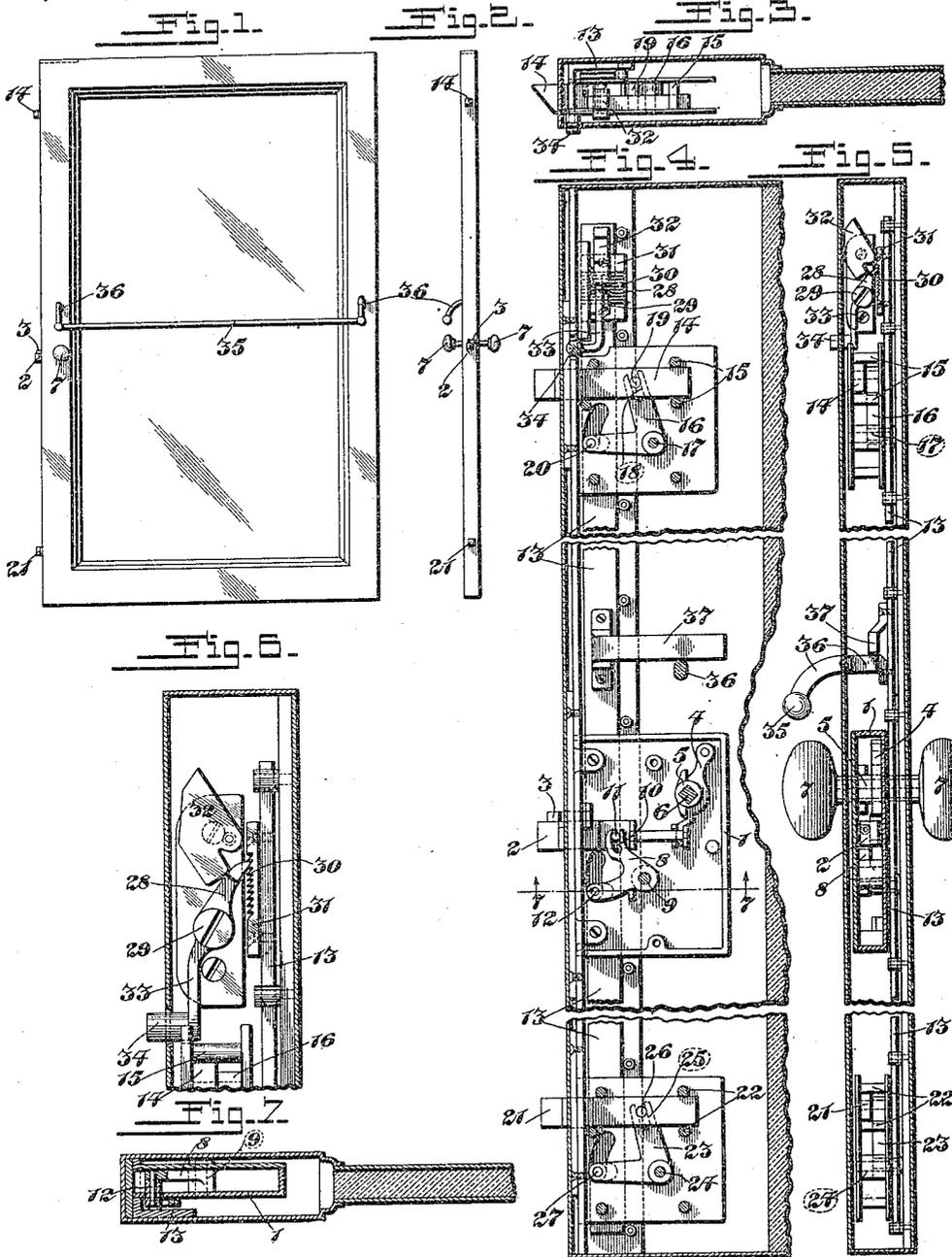


I. R. TIMLIN & H. W. QUERNHEIM.
 LATCH MECHANISM FOR DOORS.
 APPLICATION FILED SEPT. 20, 1917.

1,282,320.

Patented Oct. 22, 1918.



Attest.
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UNITED STATES PATENT OFFICE.

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LATCH MECHANISM FOR DOORS.

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Specification of Letters Patent.

Patented Oct. 22, 1918.

Application filed September 20, 1917. Serial No. 192,409.

To all whom it may concern:

Be it known that we, IRVIN R. TIMLIN and HERMAN W. QUERNHEIM, citizens of the United States, residing at the city of St. Louis and State of Missouri, have invented a new and useful Latch Mechanism for Doors, of which the following is a specification.

This invention relates to latch mechanism for doors.

An object of the invention is to provide an improved lock or latch for holding a fire door closed including lock or latch bolts near the upper and lower ends of the fire door, and an intermediate lock or latch bolt, in combination with improved mechanism for releasing the latches to enable the door to be opened.

Another object of the invention is to provide an improved fire door having a lock or latch bolt near each end thereof and an intermediate lock or latch bolt, and connections between all of the latch bolts whereby operation of the intermediate one will also operate the others, and means for operating the intermediate latch bolt.

Other objects will appear from the following description, reference being made to the drawings, illustrating a preferred embodiment of the invention in which—

Figure 1 is a side elevation of a door embodying our invention.

Fig. 2 is an edge elevation of the door.

Fig. 3 is a view illustrating the upper latch.

Fig. 4 is a broken elevation illustrating all of the latches.

Fig. 5 is another elevation illustrating all of the latches from a different point of view.

Fig. 6 is a view illustrating the device for controlling the latches by which they are enabled to move automatically to latching position as an incident to closing of the door.

Fig. 7 is a sectional view on the line 7—7 of Fig. 4.

The door is of the hollow drawn steel type to be supported by any appropriate hinges. The latching edge of the door incloses a latch case 1 in which is mounted a sliding latch bolt 2 under control of an actuator lever 3 of usual construction and arrangement, by which the latch bolt is actuated inwardly when the door is closed. The inner end of the latch bolt 2 is connected to a lever 4 which may be actuated by the actuator member 5 through which passes the knob

shank 6. As a result of this arrangement the lever 4 may be actuated by turning the knob shank in either direction, it being understood that the knob shank may be provided with the usual knobs 7.

A bell crank lever 8 is pivoted on a support 9 in the latch case 1. One arm of the bell crank lever has a slot 10 receiving a pin 11 on the latch bolt 2, and the other arm of the lever has a pin 12 extending into a slot in a vertical bar 13.

Near the upper end of the door another latch is provided including a sliding latch bolt 14, operating in guides 15. A bell crank lever 16 is pivoted on a support 17. One arm of the bell crank lever 16 has a slot 18 receiving a pin 19 on the latch bolt 14, and the other arm of the bell crank lever has a pin 20 engaging the bar 13.

Near the lower end of the door a similar latch is provided including a latch bolt 21 operating in guides 22. A bell crank lever 23 is pivoted on a support 24. One arm of the bell crank lever 23 has a slot 25 receiving a pin 26 on the latch bolt 21, and the other arm of the bell crank lever has a pin 27 engaging with the bar 13.

As a result of this construction it is apparent that operation of the releasing devices for the latch bolt 2 will move the bar 13 to release the latches 14 and 21 at the same time that the latch 2 is released. It is also apparent that the weight of the bar 13 is sufficient to move the latch bolts outwardly and latch them when the door is closed.

It is desirable to support the bar 13 to hold the latch bolts inwardly when the door is open. For this purpose we provide a pawl 28 pivoted on a support 29 and adapted to engage with ratchet teeth 30 on a plate 31 secured to the upper end of the sliding bar 13. The pawl is actuated into engagement with the teeth 30 by a weight 32, so that when the door is opened the bar 13 will be latched in its upper position thereby holding all of the latch bolts within the door.

We provide means for automatically releasing the pawl 28 as an incident to closing of the door. Said means includes an arm 33 in connection with the pawl 28 and an extension 34 on said arm extending through the side of the door and arranged to contact with the door frame when the door is closed, and thus release the pawl 28 from the teeth 30.

It may be desirable on some occasions also to provide what is designated as a "panic door," whereby the latches may be quickly released without the use of knobs. We have illustrated such a device comprising a bar 35 extending across the door and supported by levers 36. One of the levers 36 (Fig. 5) engages under an arm 37 on the sliding bar 13, so that said bar 13 will be raised by pressing the panic bar 35 toward the door. In this way all of the latches are released without the use of any knobs which may be omitted if desired when the panic door is used.

From the foregoing it will be understood that our improved door dispenses with the use of springs and similar devices which are not usually approved in devices of this character. The latches are automatically retained within the door when the door is opened and are automatically released and moved to latching engagement with the keepers in the door frame as an incident to closing of the door.

What we claim and desire to secure by Letters Patent is:

1. In a door, the combination of a plurality of latch bolts, a vertically movable bar, bell crank levers connecting said latch bolts and said bar whereby movement of said bar in an upward direction will move said latch bolts to unlatching positions, and movement of said bar in a downward direction will move said bolts to latching positions, an actuator mounted for rocking movements and arranged to move one of said latch bolts to unlatching position and thereby actuate said bar to move the remaining latch bolts to unlatching positions when said

actuator is rocked in either one of two directions, a bar extending transversely across the door, levers supporting said last-named bar at a distance from the door, and a connection from said bar to one of said last-named levers, whereby said vertically movable bar will be operated to move said latch bolts to unlatching positions when said last-named bar is moved toward the door and while said actuator remains stationary.

2. In a door, the combination of a plurality of latch bolts, a vertically movable bar, levers connecting said bar with said latch bolts whereby upward movement of said bar will move said latch bolts to unlatching positions and downward movement of said bar will move said latch bolts to latching positions, an actuator mounted for rocking movements and arranged to move one of said latch bolts to unlatching position and thereby actuate said bar to move the remaining latch bolts to unlatching positions when said actuator is rocked in either one of two directions, levers extending outwardly at one side of the door, a bar supported by said levers transversely of the door, and a connection between one of said last-named levers and said vertically movable bar, whereby movement of said last-named bar toward the door will move said vertically movable bar upwardly and thereby move all of said latch bolts to unlatching positions while said actuator remains stationary in the position which it occupies when all of said latch bolts are in latching positions.

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