

June 16, 1936.

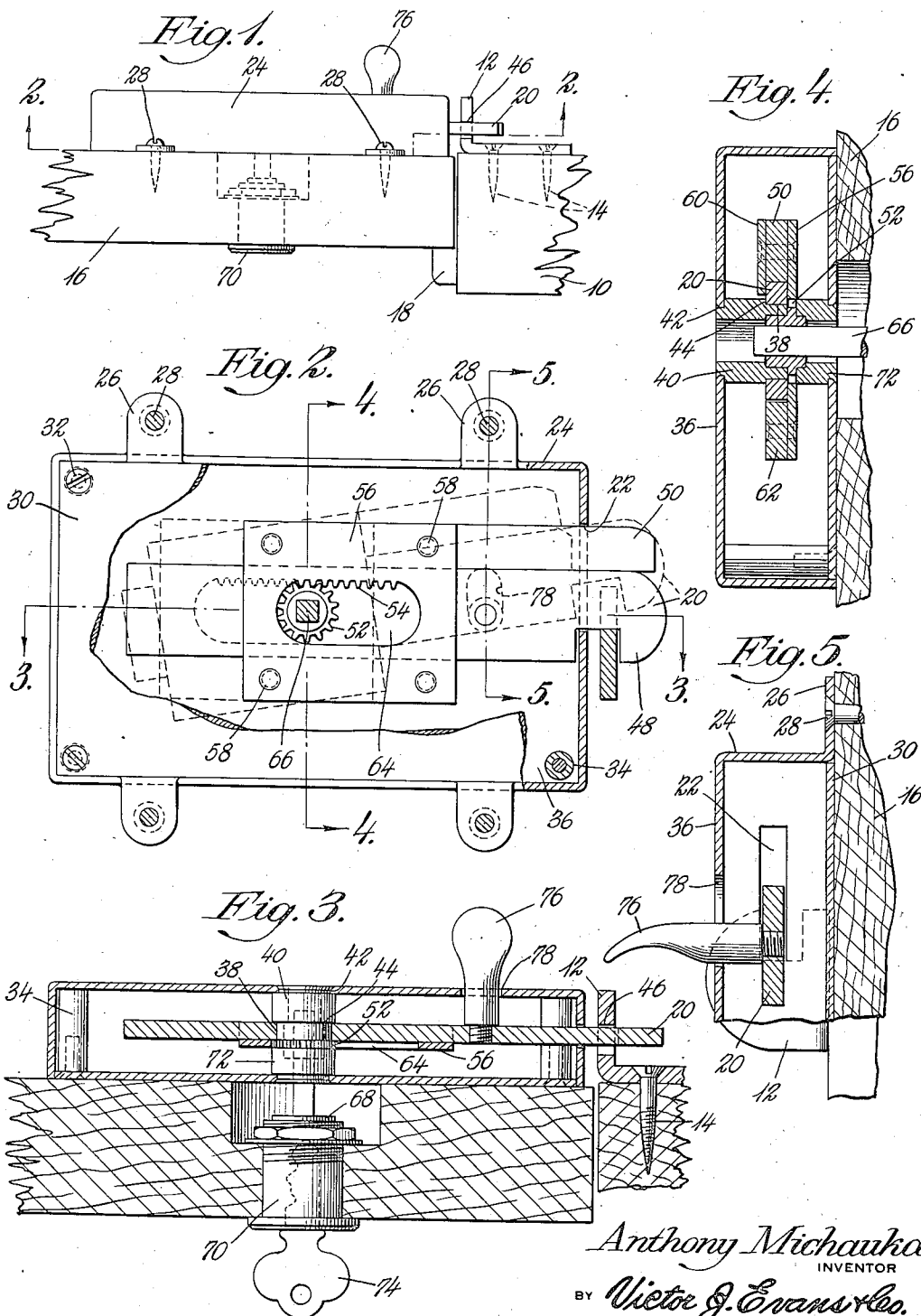
A. MICHAUKA

2,044,622

DOORLATCH

Filed July 15, 1935

2 Sheets-Sheet 1



Anthony Michauka
INVENTOR
BY Victor J. Evans & Co.
HIS ATTORNEYS

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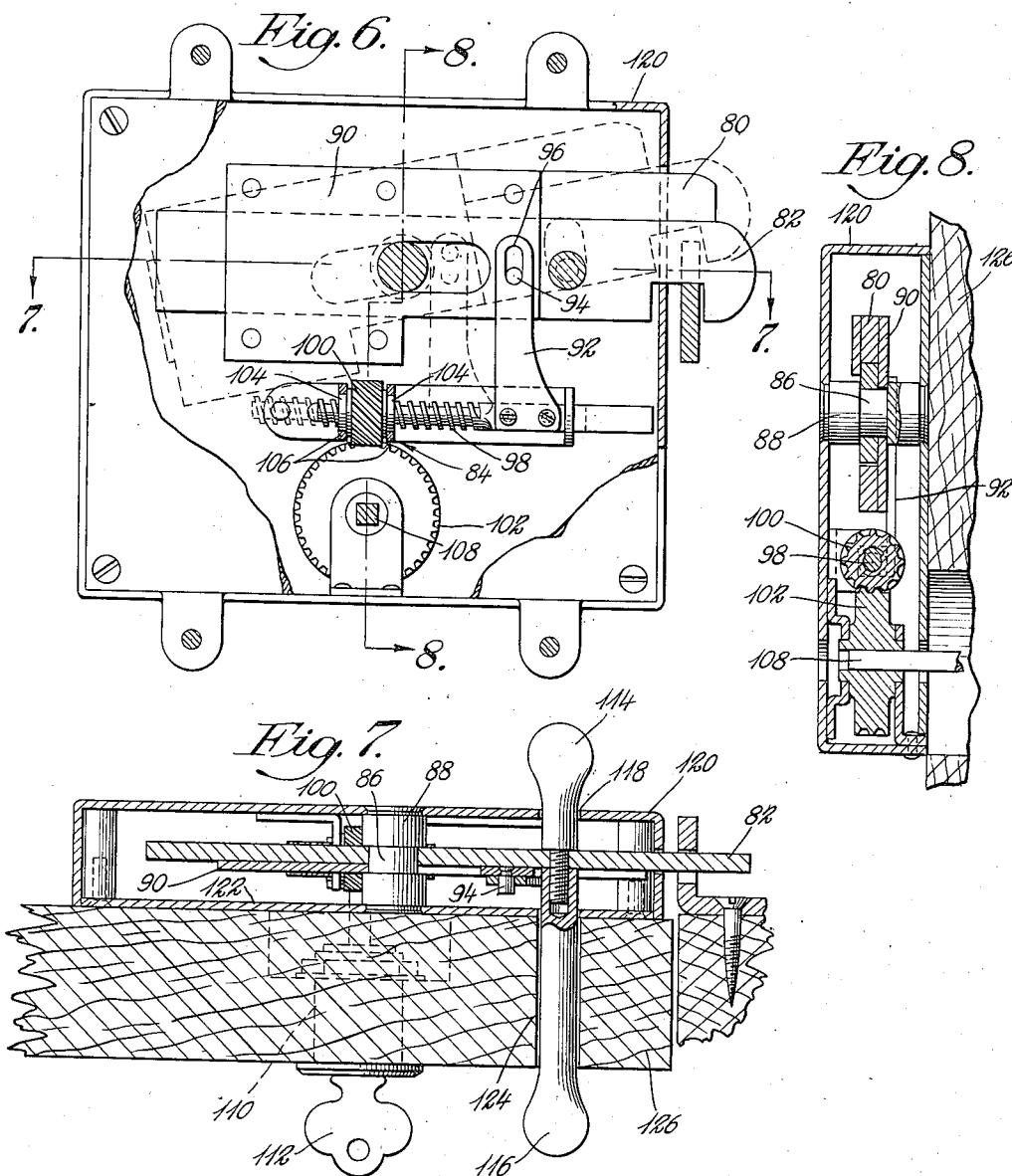
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UNITED STATES PATENT OFFICE

2,044,622

DOOR LATCH

Anthony Michauka, Chicago, Ill.

Application July 15, 1935, Serial No. 31,470

5 Claims. (Cl. 70—29)

My invention relates to door locks, and has among its objects and advantages the provision of an improved key operated latch embodying improvements over my prior Patent 1,982,529, Nov. 27, 1934.

In the accompanying drawings:

Fig. 1 is a top plan view of the device;

Fig. 2 is a sectional view along the line 2—2 of Fig. 1;

Fig. 3 is a sectional view along the line 3—3 of Fig. 2;

Fig. 4 is a sectional view along the line 4—4 of Fig. 2;

Fig. 5 is a sectional view along the line 5—5 of Fig. 2;

Fig. 6 is a sectional view of a different latch;

Fig. 7 is a sectional view along the line 7—7 of Fig. 6; and

Fig. 8 is a sectional view along the line 8—8 of Fig. 6.

In the embodiment selected to illustrate my invention, I make use of a door frame 10 carrying a keeper plate 12 secured thereto by screws 14. The door 16 is arranged in operative relation with the frame 10, and lies against the abutment strip 18 in the closed position of the door. The door is latched in position by means of a latch bolt 20 having latching relation with the plate 12.

In Fig. 2, the latch bolt 20 projects through an opening 22 in the casing 24. This casing is provided with ears 26 having openings for the reception of screws 28 imbedded in the door 10 for mounting the casing thereto. A plate 30 closes the open side of the casing and is secured in position by means of screws 32 anchored in posts 34 cast as integral parts of the casing wall 36.

Referring to Fig. 4, the latch bolt 20 is pivotally mounted at 38 upon a stud 40 having an end projecting through an opening 42 in the wall 36 and swaged for rigid connection with the casing. It will be noted that the stud 40 includes a shoulder 44 against which the latch bolt 20 bears with the end of the stud terminating substantially flush with the opposite side of the latch bolt. The latch bolt is free to pivot upon the stud at its reduced end 38 as indicated in Fig. 2. In the full line position, the latch bolt lies within a slot 46 in the keeper plate 12 and the hook 48 of the latch bolt extends over the keeper plate. In this way, the door 16 is latched against swinging movement about its hinges and the hook part 48 performs a latching function in cases where the latch is connected with sliding doors.

Upon the latch bolt 20, I slidably mount a latch element 50. This element may be adjusted along

the latch bolt to position its end between the latch bolt and one edge of the opening 22, whereby the latch bolt 20 is restrained from pivotal movement about the stud 40. Means for shifting the latch element 50 comprises a gear 52 arranged in mesh with a rack 54 carried by the plate 56 riveted to the latch element 50 at 58. The rivets 58 extend through a guide plate 60 arranged in overlapping relation with the latch bolt 20 for guiding the latch element therealong. I connect an abutment 62 with the plate 56, which co-operates with the latch bolt 20 for holding the gear 52 in mesh with the rack 54. An opening 64 in the plate 56 permits shifting of the plate with respect to the gear 52.

I mount the gear 52 upon a shaft 66 connected with a key operated cylinder 68 comprising a part of the lock 70 and carried by the door. The shaft 66 is rectangular in cross section, and the gear 52 is positioned between the end of the stud 40 and a similar stud 72 connected with the cover plate 30 in the same way as the connection 42.

In operation, the latch element 50 may be shifted to the full or dotted line position of Fig. 2 by turning the key 74. In the full line position, the latch bolt 20 is held in latched relation with the keeper plate 12. In the dotted line position the latch bolt 20 is lifted clear of the keeper plate 12.

Such shifting is brought about by moving the latch element 50 inwardly as far as the slots 64 will permit, after which further turning of the key 74 rotates the gear 52. Further rotation of the gear causes pivotal movement of the latch bolt 20 to a non-latching position with respect to the keeper plate.

I illustrate the latch bolt 20 as being provided with a grip 76 extending through a slot 78 in the casing 24. When the key 74 is released, the latch bolt 20 will, of course, drop. When in the latching position, the latch bolt may be lifted from a position inside the room by lifting the grip 76.

In Figs. 6, 7, and 8, I illustrate a different form in which the latch element 80 is shifted along the latch bolt 82 through the medium of a gear mechanism 84. In this form, the latch bolt 82 is pivotally mounted upon the neck 86 of the stud 88. To the plate 90 I connect an arm 92 through the medium of a pin 94 carried by the plate, which pin projects into a slot 96 in the arm 92. This slot permits pivotal action of the latch bolt 82 and the latch element 80. One end of the arm 92 is fastened to a screw 98 having threaded re-

lation with a helical gear 100 arranged in mesh with a second helical gear 102. The gear 100 has shaft parts 104 rotatably mounted within bearings 106, which bearings permit rotary movement but prevent axial shifting of the gear. Thus, rotation of the gear 100 imparts movement to the screw 98, whereby the latch element 80 may be shifted.

I connect the gear 102 with a shaft 108 connected with a key operated cylinder 110 of the same type as the cylinder 68. In turning the key 112, the latch element 80 may be shifted to the dotted line position, at which time the latch element and the latch bolt 82 will move to the dotted line by gravity alone position because of the shifted center of gravity of the assembly.

In Fig. 7, the latch bolt 82 is provided with two grips 114 and 116. The grip 114 projects through a slot 118 in the casing 120, while the grip 116 projects through a slot in the cover plate 122 and an aligned slot 124 in the door 126. In returning the latch element 80 to the full line position of Fig. 6, the grip 116 is depressed for shifting the element 80 and the latch bolt 82 to a horizontal position, after which the key is turned for moving the latch element to its full line position.

Without further elaboration, the foregoing will so fully explain my invention that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. In a door latch, a supporting structure including an abutment, a latch bolt pivotally mounted upon said supporting structure, a latch element slidably associated with the latch bolt, and key operated means for shifting the latch element to a position between the latch bolt and said abutment, for holding the latch bolt in operative relation with a keeper plate, said latch element being retractable to a position free of the abutment for permitting the latch bolt to be shifted out of latching relation with the keeper plate, said latch bolt being so balanced with the latch element in its retracted position as to swing away from the keeper plate.

2. A door latch comprising a housing having a latch bolt pivotally mounted therein, said housing having an opening and said latch bolt projecting through the opening for engagement with a keeper plate, a latch element slidably mounted

upon the latch bolt and arranged to be positioned between the latter and one edge of the opening for holding the latch bolt in latching relation with the keeper plate, and key operated means for retracting the latch element, to permit pivotal movement of the latch bolt, further movement of the key after retraction of the latch element imparting pivotal movement to the latch bolt.

3. A door latch comprising a housing having a latch bolt pivotally mounted therein, said housing having an opening and said latch bolt projecting through the opening for engagement with a keeper plate, a latch element slidably mounted upon the latch bolt and arranged to be positioned between the latter and one edge of the opening for holding the latch bolt in latching relation with the keeper plate, and key operated means for retracting the latch element, to permit pivotal movement of the latch bolt, further movement of the key after retraction of the latch element imparting pivotal movement of the latch bolt, said key operated means comprising in part a rack carried by the latch element, and a gear rotatable by the key.

4. A device of the type described comprising a housing, a latch bolt pivotally mounted in said housing, a latch element slidably associated therewith, an abutment, a rack carried by said latch element, a gear connected with said rack, and a key operated mechanism connected with said gear, said latch element being shiftable to a position between the latch bolt and said abutment, to hold the latch bolt against pivotal movement, said latch element being retractable, to permit pivotal movement of the latch bolt, the latter being pivoted upon further movement of the key after retraction of the latch element.

5. A latching device comprising a housing, a latch bolt pivotally mounted therein, a latch element slidably associated with the latch bolt, an abutment comprising a part of the housing, key operated screw and gear means for moving the latch element to a position between the latch bolt and said abutment, to hold the latch bolt against pivotal movement, said latch element being retractable to a position away from the abutment, to permit pivotal movement of the latch bolt, shifting of the latch element to its fully retracted position causing pivotal movement of the latch bolt.

ANTHONY MICHAUKA.