Feb. 12, 1929. 1,702,211

G. JAKOPEC ET AL

DOOR LOCK

Original Filed April 1, 1926 3 Sheets-Sheet 1

Fig. 1.

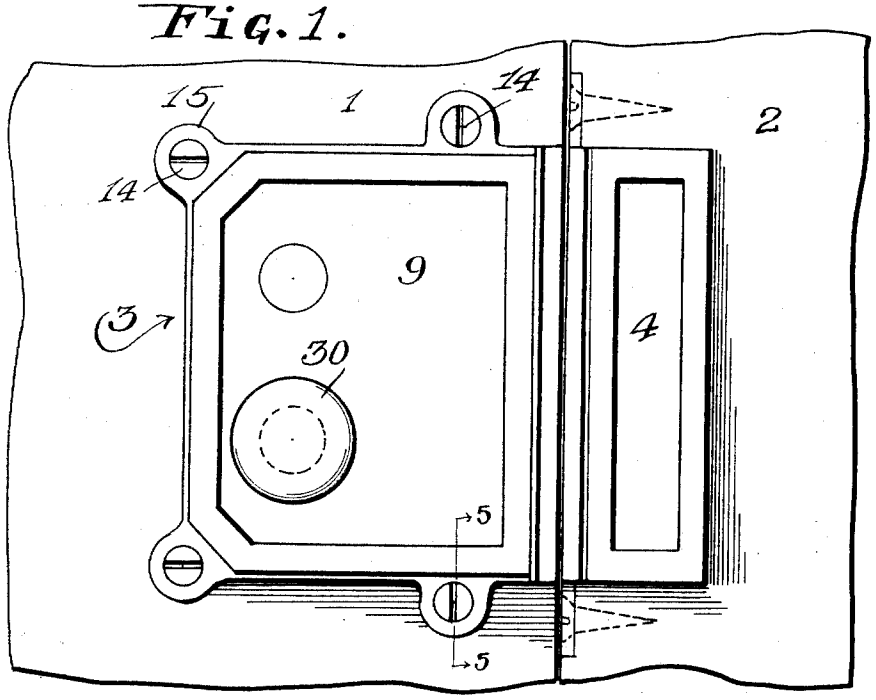


Fig. 4.

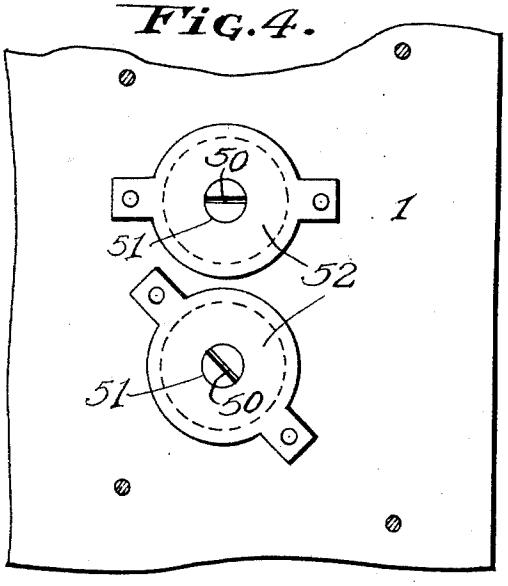


Fig. 5.

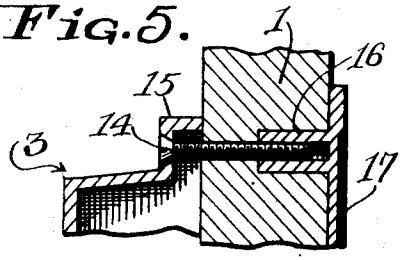
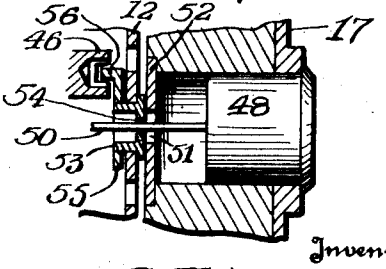


Fig. 6.



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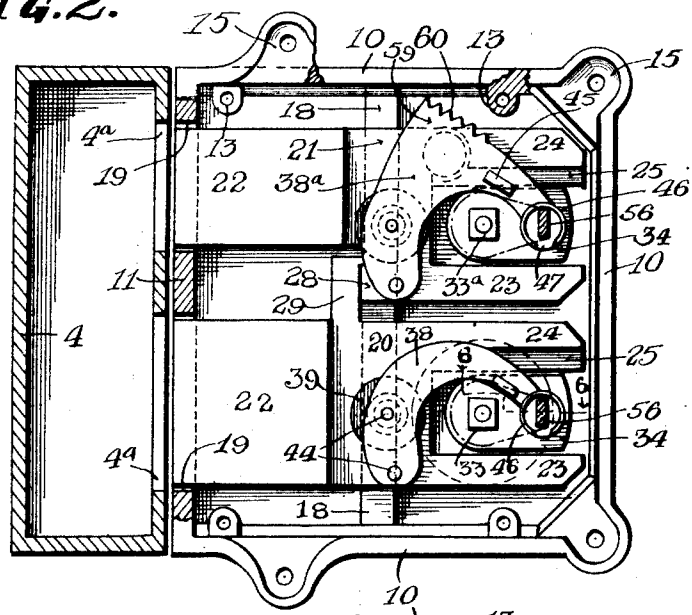
Feb. 12, 1929. 1,702,211

G. JAKOPEC ET AL

DOOR LOCK

Original Filed April 1, 1926 3 Sheets-Sheet 2

Fig.2.



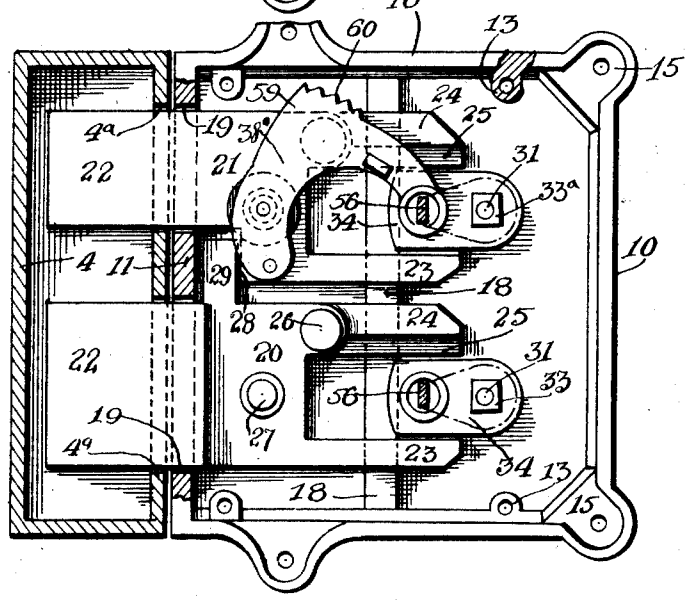


Fig.3.

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Feb. 12, 1929. 1,702,211

G. JAKOPEC ET AL

DOOR LOCK

Original Filed April 1, 1926 3 Sheets-Sheet 3

Fig. 7.

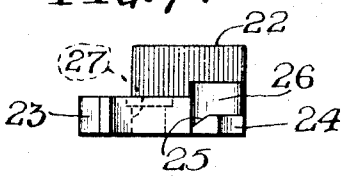


Fig. 8.

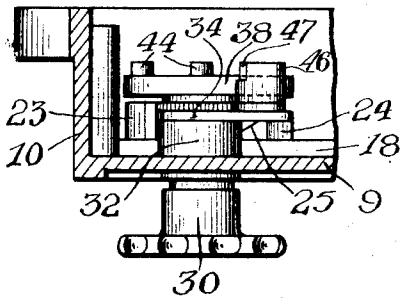


Fig. 11.

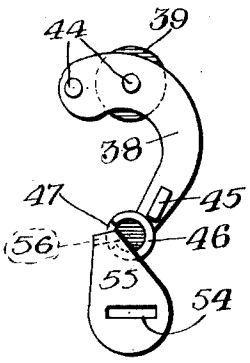


Fig. 12.

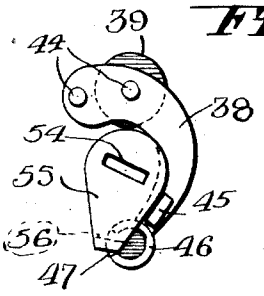


Fig. 9.

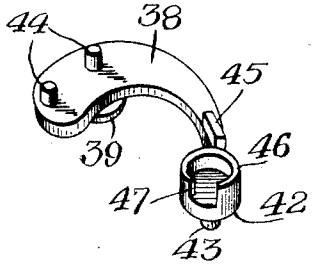


Fig. 13.

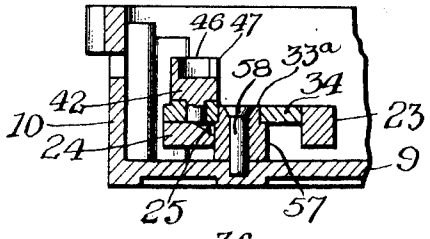


Fig. 10.

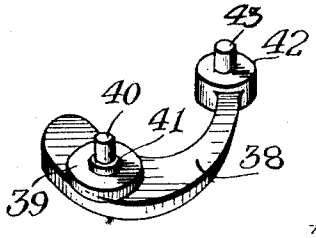
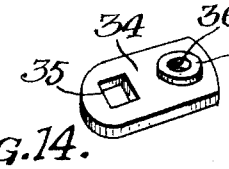


Fig. 14.



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Patented Feb. 12, 1929. 1,702,211

UNITED STATES PATENT OFFICE.

GEORGE JAKOPEC AND VINCENT SCHWARZ, OF CHICAGO, ILLINOIS.

DOOR LOCK.

Original application filed April 1, 1926, Serial No. 99,144. Divided and this application filed December 10, 1926. Serial No. 153,853.

This invention relates to certain new and useful improvements in door locks and is a division of application filed April 1, 1926, Serial Number 99,144.

The primary object of the invention is to provide a door lock embodying a pair of sliding bolts, one of which is operable from both the inner and outer sides of a door while the other bolt is alone operable from the outer side of the door and further being key operated, and with the bolts co-related to permit operation of the last named bolt, only after operation of the first named bolt.

A further object of the invention is to provide a door lock of the above type with novel devices for effecting sliding movements of the bolts.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists in the novel form, combination and arrangement of parts and in the details of construction hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings wherein like reference characters indicate corresponding parts throughout the several views;

Figure 1 fragmentarily illustrates in elevation, a door and door frame with the lock casing and keeper thereon;

Figure 2 is a top plan view of the door lock mechanism with the casing cover removed and showing the two bolts in their retracted positions;

Figure 3 is a plan view similar to Figure 2 showing the bolts in their projected locking positions;

Figure 4 is a fragmentary plan view showing the inner face of the door with the lock casing removed;

Figure 5 is a detail sectional view taken on line 5—5 of Figure 1, showing the manner of securing the lock casing and outer face plate to the door;

Figure 6 is a detail sectional view taken on line 9—9 of Figure 2;

Figure 7 is an end elevational view of one of the bolts;

Figure 8 is a detail sectional view through the lock casing;

Figures 9 and 10 show reversed perspective views of the curved link connecting the sliding bolt to the operating arm;

Figures 11 and 12 show top plan views of the connecting link and the key operated means therefor with the link in projected and retracted positions, respectively;

Figure 13 is a detail sectional view showing the mounting for the arm to which one end of the connecting link is pivotally attached; and

Figure 14 is a perspective view of the operating arm for the connecting link.

Referring more in detail to the accompanying drawings, there is illustrated a door lock mechanism associated with the door 1 and door frame 2, the lock casing 3 being secured to the door 1 while the keeper casing 4 is secured to the door frame 2. The lock casing 3 includes a top wall 9, side walls 10 and 11 and a removable bottom wall 12 retained in position by screws or like fastening devices passing therethrough and entering the inwardly directed lugs 13 carried by the side walls 10, the removable bottom wall being shown in Fig. 6. The lock casing 3 being secured to the inner face of the door 1, the anchoring screws 14 passing through the apertured lugs 15 carried by the lock casing enter the door 1 and are threaded into barrel portions 16 extending into sockets formed in the outer face of the door and carried by the outer face plate 17 as shown in Fig. 5, the heads of the screws being hidden so that the outer face plate can not be removed.

As shown in Figs. 2 and 3, the top wall 9 of the lock casing upon the inner face thereof is provided with a cross rib 18 substantially midway between the side wall 11 and opposite wall 10 so that the sliding bolts mounted in the lock casing ride upon this rib and the narrow walls of the bolt openings 19 in the side wall 11 to reduce friction incident to the sliding movements of the bolt.

A pair of parallel sliding bolts 20 and 21 are mounted in the lock casing, an enlarged head 22 being carried by the forward end of each bolt, the bolts being supported upon the cross rib 18 with the head 22 projecting through the openings 19 and 4ª respectively of the lock and keeper casings as shown in Figs. 2 and 3. The body portion of each bolt at the end thereof opposite the head 22 is bifurcated to provide a pair of side legs 23 and 24, the leg 24 being of less thickness than the leg 23 as shown in Figs. 2, 3 and 7 with the inner side of the leg 24 beveled as at

25. The leg 24 of each bolt at its inner end carries a perpendicular stud or block 26 while the body portion of each bolt intermediate the ends thereof is provided with an opening 27 that is countersunk as illustrated by dotted lines in Fig. 7 for purposes presently to appear. As shown more clearly in Figs. 2 and 3, the body portion and head of the bolt 21 is cutaway at one side to provide a shoulder 28 that is in the path of movement of the laterally directed arm 29 carried by the adjacent side of the bolt 20.

The operating means for the bolt 20 includes the knob 30 carried by the spindle 31 that is swiveled in the bearing block 32 carried by the bottom wall 9 of the lock casing as shown in Fig. 8 with the inner end thereof projecting inwardly of the bearing block 32 carrying the polygonal block 33 shown in Figs. 2 and 3. The arm 34 shown in detail in Fig. 14 is provided with a polygonal opening 35 in one end thereof that receives the block 33 while the opposite end of said arm is provided with a circular opening 36 surrounded by an upstanding flange 37.

The connecting link 38 shown in Figs. 2, 3, 9 and 10 forms communication between the operating arm 34 and the bolt 20, said link being of arcuate formation as illustrated and having upon its lower face as illustrated in Fig. 10 a disk block 39 carrying a centrally disposed pin 40 surrounding at its base by the circular flange 41, the pin 40 and flange 41 being received in the countersunk opening 27 in the body portion 20 of the bolt. This block 39 rests upon the adjacent face of the bolt and removes the major surface of the connecting link from wiping engagement with the bolt. A disk block 42 is carried by the outer end of the connecting link 38 and said block 42 carries upon its lower face a central pin 43 that is received in the opening 36 in the free swinging end of the operating arm 34, the circular flange or boss 37 surrounding the opening 36 spacing the connecting link from the operating arm. As shown in Fig. 9 the end of the curved connecting link 38 is provided on the side opposite disk block 39 with a pair of spaced pins 44 while the other end of the connecting link adjacent the block 42 is provided with a block 45, the pins 44 and block 45 engaging the removable walls 12 of the lock casing for retaining the connecting links in position in the lock casing. The relative positions of the bolt 20, operating arms 34 and connecting link 38 are shown in Figs. 2, 8 and 13, the knob 30 in operating the arm 34 moving the same over the leg 24 of the bolt while the leg 23 of the bolt being in the path of movement of the operating arm 34 as shown in Figs. 3 and 16, limiting movement of the operating arm in its movement for projecting the bolt 20. For purposes presently to appear, the disk block 42 carries an upwardly directed annular flange 46 having an opening 47 in the side wall thereof as shown in Fig. 12.

The bolt 20 being operable from the inner side of the door 1 as shown in Fig. 1 by the knob 30, key operated mechanism carried by the outer side of the door is employed for operating the bolt and the key operated mechanism is shown in detail in Figs. 6, 11 and 12. As shown in Fig. 6, the outer face plate 17 of the lock casing structure carries a key barrel casing 48 set into the opening 49 provided in the door 1 with a blade 50 carried by the barrel casing 48 and rotatable by a key projects through the central opening 51 formed in the face plate 52 that is set into the inner face of the door 1 inwardly of the lock casing as shown in Figs. 4 and 6. A flanged cup-shaped member 53 is rotatably supported in the removable walls 12 of the lock casing and has a slot 54 in the bottom wall thereof through which the blade 50 freely projects, that end of the cup-shaped member 53 within the lock casing having a lever arm 55 fixed thereto with a laterally directed lug 56 carried by the free swinging end thereof. The blade 50 being rotated by a key placed within the lock barrel casing 48, the lever arm 55 is moved to shift the lug 56 through the side opening 47 in the annular flange 46 of the block 42 upon the connecting link 38 for moving the connecting link and in turn the bolt 20 connected thereto. The bolt 20 may be operated from the inner side of the door by the knob 30 and also projected and retracted from the outer side of the door by operating the lock barrel blade 50.

The sliding bolt 20 constituting a secondary lock is operated only from the outer side of the door, and as shown in Fig. 13, the bottom wall 9 of the lock casing 3 carries a bearing block 57 anchored in position by the pin 58 with a keyed portion 33^a at the upper end thereof as shown in Figs. 2 and 3 that extends into the rectangular opening 35 of an operating arm 34. The connecting link 38^a carries a laterally projecting cam wall on the outer edge thereof adjacent the upper side wall 10 of the lock casing with rack teeth 60 on the outer edge of the cam wall that cooperate with burglar alarm mechanism forming part of another application. The connecting link 38^a is otherwise of identical construction with the link 38 and is operated by a similar arm 34. The bolt 20 is operable from the inner or outer side of the door by the knob 30 or key operated mechanism, while the bolt 21 is alone operated from the outer side of the door. Only the bolt 20 is employed for locking the door from the inner side while both bolts 20 and 21 are employed for locking the door at the outer side. The projection 29 on the bolt 20 extends in the path of projecting movement of the bolt 21 so that said bolt 21 can not be operated without first projecting the bolt 20. The pin 31 to which one

end of the arm 34 is attached has the link connection with the sliding bolt so that when the arm 34 is swung about its pivotal support sliding movement is imparted to the bolt. The bolt 21 constitutes an additional safety lock feature when a house is vacated so that bolts may be locked from the outside.

While there is herein shown and described the preferred embodiment of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What we claim as new is:—

1. In a door lock mechanism, a lock casing and keeper, a sliding bolt in the lock casing to be projected into the keeper, an arm pivotally mounted in the lock casing, a link connecting the arm with the bolt, an operating knob for the pivoted arm, a key operated arm associated with the link for operating the bolt independently of the knob, the connection between the last named arm and link including an annular flange on one end of the link having a side opening, a lug on the key operated arm adapted to enter the flange opening for moving the link in either direction to project or retract the bolt, a second sliding bolt in the casing, and a lug and shoulder engagement between the two bolts preventing operation of the second bolt prior to operation of the first bolt.

2. In a door lock mechanism, a lock casing and keeper, a sliding bolt in the lock casing to be projected into the keeper, an arm pivotally mounted in the lock casing, a link pivoted at one end to the arm and at its other end to the bolt, an operating knob for the pivoted arm, a key operated arm associated with the link for operating the bolt independently of the knob, the connection between the last named arm and link including an annular flange on the end of the link attached to the arm and having a side opening, a lug on the key operated arm adapted to enter the flange opening and engage the wall of the flange for moving the link in either direction to project or retract the bolt, said bolt being bifurcated at its inner end to provide spaced parallel legs with one leg of reduced thickness to provide a clearance for the knob operated arm, a second sliding bolt in the casing, and a lug and shoulder engagement between the two bolts preventing operation of the second bolt prior to operation of the first bolt.

In testimony whereof we affix our signatures.

GEORGE JAKOPEC.
VINCENT SCHWARZ.