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P. OGNOWICZ

DOOR LOCKING MECHANISM

Filed Oct. 16, 1924

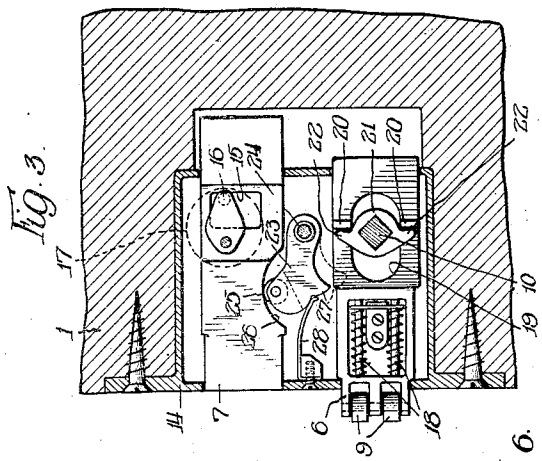


Fig. 3.

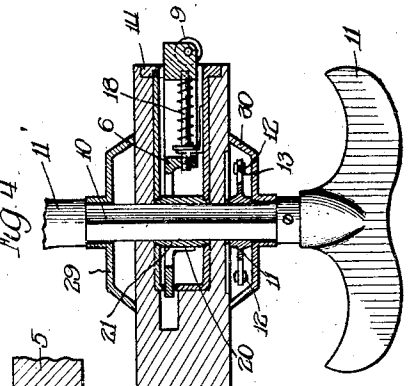


Fig. 4.

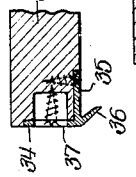


Fig. 6.

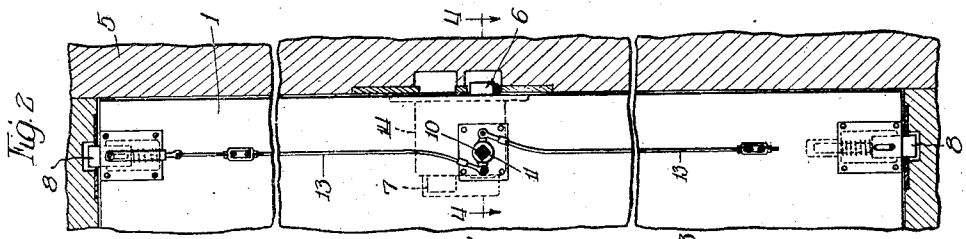


Fig. 2.

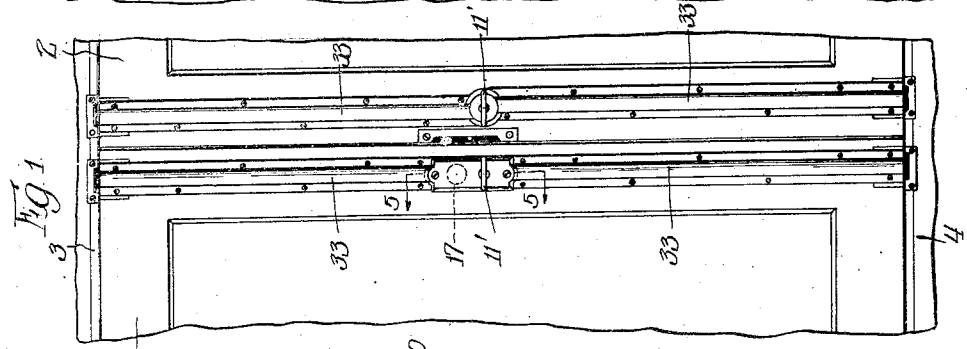


Fig. 1.

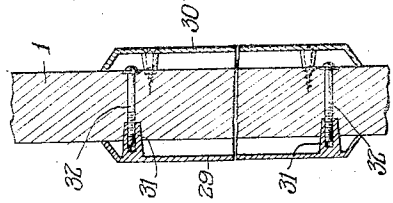


Fig. 5.

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UNITED STATES PATENT OFFICE.

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DOOR-LOCKING MECHANISM.

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The present invention relates to door locking mechanism.

An object of the present invention is to provide a locking mechanism for doors which is particularly sturdy and which, while simple in construction, is effective in thwarting the attempts of intruders to break said mechanism.

A further object is to provide a locking mechanism which is smooth in operation, positive in its action, inexpensive to manufacture and which is applicable for the locking of doors of either the single or double variety.

A further object is to provide a locking mechanism for doors which is readily adaptable for locking doors not only at the side edge but at the bottom and top of said doors.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a view of double doors in closed position, said view being taken from the inside of said doors and showing an embodiment of the present invention applied thereto;

Figure 2 is a view similar to Figure 1 but showing a single door cooperating with a relatively stationary jamb and having certain parts removed for clarity of illustration;

Figure 3 is a sectional view of certain locking mechanism forming part of the present invention, said view being taken from the rear of the structure shown in Figure 2;

Figure 4 is a sectional view taken along the plane indicated by the arrows 4—4 of Figure 2;

Figure 5 is a sectional view taken along the plane indicated by the arrows 5—5 of Figure 1; and

Figure 6 illustrates a detail of construction.

The numeral 1 indicates a door, and the numeral 2 indicates a second door cooperating with the door 1. The numeral 3 indicates the upper sill and the numeral 4 indicates the lower sill of a doorway. Said doors 1 and 2 are swinging doors and are shown in closed position. Figure 2 shows the swinging door 1 and a stationary door jamb 5 cooperating therewith.

The present invention contemplates improved mechanism for positively locking and releasably latching the door 1 in closed position, certain features of the invention contemplating the control of the door 2. According to the structures illustrated in Figures 1 and 2, a latch 6 is provided to extend outwardly from the swinging edge of the door 1. Said latch is spring-pressed outwardly in a manner which will be referred to hereinafter. Adjacent to the latch 6 is a keeper bolt or dead bolt 7, which is shown in dotted lines in retracted position in Figure 2.

Located at the top and bottom edges of the door 1 are a pair of latches 8—8, which are spring-pressed outwardly and which are adapted to seat within certain recesses in the top and bottom sills of the doorway. The latches 6 and 8 may be provided with roller bearings 9—9, illustrated in Figure 3, whereby to simplify the entrance of said latches into and removal of said latches from their corresponding recesses. The latch 6 at the side edge of the door 1 is adapted to be directly operated from the shaft 10, which carries the handles 11′—11′ at the two opposite sides of the door. Said shaft 10 is shown as being square in cross section and is provided with the fitting 11 non-rotatably connected thereto, which fitting 11 provides the pair of radially extending arms 12—12. Said arms 12—12 are connected to the cables or rods 13—13, which cables or rods 13—13 are connected to the spring-pressed latches 8—8 at the top and bottom edges of the swinging door 1. Said cables or rods should preferably be extensible, as by means of turn buckles. A turning movement of shaft 10 in a counterclockwise direction as the parts are viewed in Figures 1 and 2 will result in the retraction of the latches 8—8 at the top and bottom edges of the door 1. This movement will also result in the retraction of the latch 6 at the side edge of the door 1, as will be referred to more in detail hereinafter.

Referring now particularly to Figure 3, the numeral 14 indicates a casing, which may be fitted into the side edge of the door 1, being held within said door by means of screws or other preferred holding means. Mounted for reciprocation within said casing 14 in the plane of the door 1 is the keeper bolt 7 above referred to, which keeper bolt is provided with the slot 15 adapted to receive the pin 16 of a lock 17, indicated in dotted lines. It will be clear that by operation of the lock 17, the keeper bolt 7 may

be held in projected position, or may be held in retracted position. The retracted position is illustrated in Figure 3. The latch member 6 is mounted within the casing 14 adjacent to bolt 7 and in a position to have movement parallel with the line of movement of the keeper bolt 7. Said latch member 6 is normally projected outwardly by means of the springs 18—18, which springs have an abutment against a relatively fixed portion of the casing 14. Said latch member 6 is provided with the slot 19 for receiving the shaft 10. By reason of said slot, reciprocation of the latch member 6 is not interfered with. Said latch member 6 is provided with a pair of abutments 20—20 adapted to cooperate with the member 21 fixedly secured to the shaft 10. Said member 21 has the two operating portions 22—22 for cooperation with the abutments 20—20, whereby turning of the shaft 10 in either direction will result in the retraction of the latch member 6 against the tension of the springs 18—18.

Cooperation may be had between the keeper bolt 7 and the latch member 6 by the provision of certain interlocking mechanism, which will now be referred to. Located between the keeper bolt 7 and the latch member 6 is the detent 23 pivoted for movement about the axis 24. Said detent member 23 has an ear portion providing bearings for a roller 25 adapted to contact with the cam surface 26 on the under side of the keeper bolt 7. The lower portion of the detent member 23 is provided with the abutment portion 27 adapted to abut against a shouldered portion of the latch member 6. The abutting position of said abutment portion 27 is indicated in dotted lines in Figure 3. A spring 28 is provided, which tends to urge the detent member 23 out of cooperative relationship with the latch member 6. The cam portion 26 is so arranged relative to the detent member 23 that when said keeper bolt 7 is in its retracted or unlocking position the spring 28 will hold the detent member 23 out of cooperative relationship with the latch member 6. When the locking member 7 is in its projected or locking position, however, the detent member 23 will be swung downwardly against the tension of the spring 28, whereby the abutment portion 27 of the detent member 23 will be moved into abutting relationship with the latch member 6, whereby said latch member 6 can not be retracted. The locking of the keeper bolt 7 in either its projected or retracted position will, therefore, control the operation of the latch member 6.

It will be clear that according to the structure shown in Figure 3 the shaft 10 may be turned in either direction to cause the retraction of the latch member 6. When the locking device is used in connection with the structure shown in Figure 2, however, turning of the shaft 10 must be had in one direction only, to cause the retraction of the latch members 8—8 at the top and bottom edges of the door.

The means for protecting the locking mechanism from tampering will now be described. Mounted on the outside of the door is the face plate 29, and mounted on the inside of the door is the face plate 30. Said face plates 29 and 30 may have bushings (not shown), which provide bearings permitting the free rotation of the shaft 10. The face plate 29 on the outside of the door is provided with the inwardly extending lugs 31 (Figure 5) adapted to be embedded in the material of the door. Said lugs 31—31 are internally screw-threaded for reception of the bolts 32—32, which extend to the inner side of the door 1. The heads of said bolts 32—32 are covered by the face plate 30, which face plate may be held in place by means of screws or other preferred holding means. The numerals 33—33 indicate guards or covering means for the cables or rods 13—13.

Referring to Figure 1, it will be noted that the lock 17 need be associated with only one of the swinging doors. Moreover, in many installations it will be preferred to have the lock 17 presented only outwardly of the door 1 instead of both inwardly and outwardly.

The face plate 29 should be of tool-resisting steel, whereby to baffle unauthorized persons attempting to break the lock. It will be clear that by reason of the fact that the lugs 31—31 are embedded within the material of the door, it will be impossible to remove the face plate 29 by the common expedient of inserting a tool between said face plate and the door 1 to attack the holding screws for said face plate.

Figure 6 shows a keeper suitable for latch 6 or either of the latches 8. Said keeper has the two flanges 34 and 35 preferably arranged at right angles to each other, each of said flanges being embedded in the member upon which it is mounted. The flange 35 will be located interiorly of the building being protected and is provided with the latch guiding lip 36. The flange 34 is provided with bolt and latch receiving apertures, one of which is represented by the numeral 37. The keeper illustrated and described has the advantage that it cannot be pried loose when the door mechanism is in locked position.

It will be clear without detailed description that the locking mechanism embodying the principles of the present invention is simple and positive in its action, cheap to manufacture and little liable to get out of order.

It will be understood that the described

embodiments of the present invention are chosen merely for the purposes of illustration and should not be considered in a limiting sense. It is intended to cover all modifications of the present invention falling within the scope of the appended claim.

What is claimed is:

In combination, a door, relatively stationary means above, below and at the swinging edge of said door, keeper means upon all of said upper, lower and side stationary means, spring-projected latch members for cooperation with all of said keeper means, a unitary control member for said latch means, said control member being connected to said upper and lower latch means by means of extensible elongated members, the latching member at said side edge comprising a spring-projected frame member, a positively acting dead bolt mounted in parallel relationship with said frame member, a detent having camming relationship with said dead bolt, said detent member being a simple rocking member located between said dead bolt and said frame member and adapted to hold said frame member positively in projected position and to prevent operation of said control member when said dead bolt is in projected position, and a face plate upon the outside of the door for protecting said control member, said face plaie having screw-threaded lugs projecting into the material of said door, and bolts having their heads disposed on the inside of said door for cooperating with said screw-threaded lugs.

Signed at Chicago, Illinois, this 13th day of October, 1924.

PAUL OGNOWICZ.