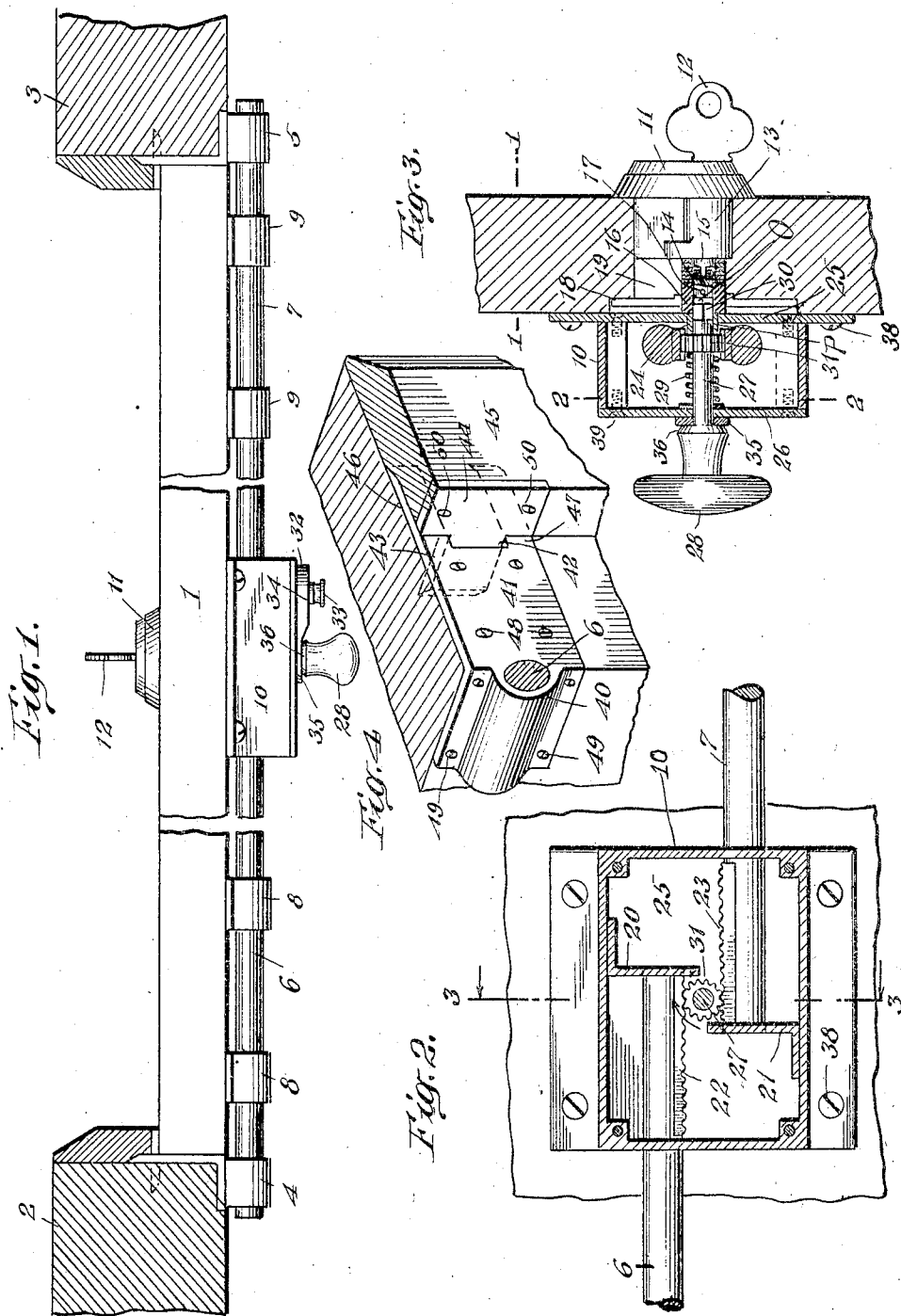


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DOOR BOLT MECHANISM.
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UNITED STATES PATENT OFFICE.

MICHAEL FURMAN, OF NEW YORK, AND WALTER T. ROWE, OF TUCKAHOE, NEW YORK.

DOOR-BOLT MECHANISM.

932,383.

Specification of Letters Patent.

Patented Aug. 24, 1909.

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To all whom it may concern.

Be it known that we, MICHAEL FURMAN, a citizen of the United States, and a resident of the borough of Bronx, county, city, and State of New York, and WALTER T. ROWE, a citizen of the United States, and a resident of Tuckahoe, county of Westchester and State of New York, have invented certain new and useful Improvements in Door-Bolt Mechanism, as set forth in the following specification.

This invention relates to door locking or door bolting.

The general object of the invention is to insure the bolting of a door in a secure manner against jimmying or any forcible opening by unauthorized persons.

To this end one object is to provide for the bolting of the door upon both sides, the hinged side and the opposite side, as it has been found that many forcible entries have been accomplished by removing the hinges of a door.

A further object of the invention is to provide an improved arrangement of means for the locking and manipulation of such bolts by means of a suitable lock and key, as of the tumbler type.

A further object of the invention is to provide for throwing out of operation all the key operated manipulation of the bolts by means on the interior of the door so that even the proper key will then be ineffective in throwing the bolts but so that the operating shaft for the bolts may be freely manipulated from the interior of the door.

It is also an object of the invention to improve the jamb sockets for the door bolts so as to prevent access to the door bolts from the exterior of the door.

The above and further objects of the invention will be pointed out in the accompanying claims and will be clear from the following description which may be read in connection with the accompanying drawings, which form part of this application, in which like characters designate corresponding parts and in which:

Figure 1 is a horizontal section with lines broken away through line 1—1 of the door construction of Fig. 3 and showing the application of the invention; Fig. 2 is a section through the case and through line 2—2 of Fig. 3; Fig. 3 is a section on line 3—3 of Fig. 2; and Fig. 4 is a perspective view showing one of the bolt sockets in position.

Referring now more in detail to the drawings, 1 indicates any suitable door, suitably hinged between the jambs 2 and 3, it being understood that the door may be hinged either to the jamb 2 or to the jamb 3 as desired.

4 indicates the bolt socket secured to jamb 2 and 5 a similar socket secured to jamb 3.

6 and 7 designate respectively bolts extending across the inner face of the door and cooperating with sockets 4 and 5. Suitable guides 8 and 9 for the bolts 6 and 7 respectively may be suitably secured to the door 1.

10 indicates the interior bolt case, while 11 indicates any suitable form of lock preferably of the cylinder type with tumblers and operated by the key 12.

The lock cylinder is indicated by 13. A shaft 14 axially alined with the cylinder 13 is preferably secured to the cylinder 13 as by an universal joint or its equivalent and indicated by 15. On the inner end of the shaft 15 is provided a clutch member 16 which is shown as a female clutch member in the form of a short cylinder axially perforated by a polygonal opening O. A pin 17 may secure the clutch member 16 to the shaft 14, the shaft 14 being provided with a series of spaced holes for this pin so as to provide for adjustment in accordance with different thickness in the doors, it being understood that the shaft 14 should be provided long enough for the maximum thickness of door and that any excess of length may be cut off. The usual inside escutcheon plate 18 may be mortised into the interior of the door and provide a seat for the screws 19 holding the lock 11 in place. This escutcheon plate may also form a bearing for the clutch member 16.

Within the interior case 10 suitable guides as 20 and 21 are provided for the inner ends of the bolts 6 and 7. These inner ends of the bolts are also provided with facing racks 22 and 23 suitably secured to the respective bolts. To the rear of and centrally positioned relatively to the racks 22 and 23 is shown a bearing 24 fixed to the base 25 of the case 10. This bearing 24 is provided with a cylindrical bearing opening P and the case 10 should be secured to the interior of the door 1 so that this opening P alines with the previously described opening O in the clutch member 16.

Journaled in the cover 26 of the case 10 is an operating shaft 27 provided at its outside with the manipulating knob 28. This shaft

has an outward movement through the cover 26 but is forced inwardly by the compression spring 29. The inner end of the shaft 27 has a bearing in the bearing 24 and its extreme inner end is made polygonal in cross section to correspond to the polygonal opening in clutch member 16, and serves as a male clutch member 30. Fixed to this shaft is a spur gear 31 cooperating with the racks 22 and 23.

A night latch 32 is slidably secured to the cover 26. It has a manipulating knob 33 and is made substantially wedge-shaped and is slotted to straddle shaft 27. Its portion 34 has greater thickness than its portion 35. The spring 29 holds the boss 36 of knob 28 in contact with this latch plate. When the portion 35 is beneath the boss 36 the clutch members 16 and 30 operatively engaged as shown in Fig. 3. When the thicker portion 34 is beneath the boss 36 the clutch members are disengaged but the spur-gear 31 is still operatively engaging the racks 22 and 23. However, the wedge-shaped night latch in all positions permits the free rotation of the shaft 27 throughout as many rotations of the same as may be required. This is an advantage inasmuch as considerable leverage may be required to throw the long bolts 6 and 7 and a greater leverage may be obtained by a small pinion 31 turning through a complete rotation, than by a large pinion turning a few degrees. It is also to be understood that the bearing 24 is long enough to serve as a seat for the shaft 27 when in both of the positions just described.

The case 10 may be secured to the inside of the door by any suitable means as by screws 36 and the cover 26 may be suitably secured to the case as by screws 37. The inside walls of the case 10 cooperating with the racks 22 and 23 may serve as stops for limiting the movement of the bolts 6 and 7 and maintain the parts in assembled relations.

The socket members 4 and 5 previously referred to, are shown in a peculiar construction in detail in Fig. 4. The socket portion 40 may be suitably shaped to receive the bolt as indicated. It is preferably formed integrally with a flat plate 41 extending out at a right angle and adapted to lie against the door jamb between the jamb and the edge of the door. It is provided with a slot 42 through which may extend the tongue 43 of plate 44 to be secured to the buffer strip 45. The ends of the tongue 43 and of the projecting ends 46 and 47 of the part 41 may be beveled off to a chisel-like edge so as to facilitate driving them into place in the jamb construction. Suitable means such as screws 48 may secure the portion 41 and additional means such as screws 49 may secure the socket portion 40 although this portion, being integral with the portion 41, would be secured by the screws 48. The member 44

may likewise be secured in position by suitable means as by screws 50. The member 41 having portions 46 and 47 on each side of the slot 42 is made long enough for the maximum width of doors and the slot 42 provides for the adjustment of the member 44 to suit the width of the particular door construction employed. These plates may be mortised into the jamb construction if desired and as shown and serve actually to prevent the insertion of a thin tool to manipulate the bolts 6 or 7 from the exterior of the door.

The various parts may be constructed of any suitable material, for instance cast, wrought or stamped metal.

Operation: The parts are shown in their proper position for manipulation by the key 12 from outside the door. One complete left hand rotation of the key 12 effects one complete rotation of the cylinder 13 which in turn effects one complete rotation of the clutch member 16. The intermediate connection between clutch member 16 and the cylinder 13 is made flexible so as to compensate for any slight error of alinement in various parts. The clutch member 16 imparts one complete rotation, in the direction of the arrow shown in Fig. 2, to the shaft 27 and to spur gear 31. A rotation of spur gear 31 causes the racks 22 and 23 to travel in the direction to remove the bolts 6 and 7 from the sockets 4 and 5. The door is now unlocked and may be opened in any well known manner. The key 12, of course, would be removed and carried by the owner. In case it is desired to lock the door from the interior the night latch 32 should be forced to the left from the position shown in Fig. 1 causing the boss 36 to ride up on to the thick portion 34 which disengages the clutch members 16 and 30. A left hand turn of the manipulating knob 28 will then throw the bolts 6 and 7 into their sockets 4 and 5. It will then be impossible, even with the proper key, to throw the bolts 6 and 7 to unlocking position from the outside of the door. This is evident because the cylinder 13 may be turned around indefinitely without effecting the

Although a satisfactory embodiment of the various features of the invention has been illustrated and described, it is to be understood that what has been illustrated and described is merely for the purpose of illustration and not as a limitation. It is also to be understood that the term "bolt" is used to include a bolt not necessarily such as illustrated as an integral bar extending from case 10 to the edge of the door but of suitable construction and comprising any suitable number of parts. It is also to be understood that other means than a rack and gear may be used to manipulate a bolt although such means is preferred. Furthermore the case

10 need not be constructed precisely as shown. It is not essential that the case have a removable cover or an integral back plate.

What is claimed and what is desired to be secured by United States Letters Patent is:

1. In door bolting mechanism in combination, one or more movable bolts; rotatable means key operable from the outside of the door; a clutch member connected to the inside portion of said rotatable means; an axially movable rotatable bolt throwing shaft provided with a hand knob for manipulation from the inside of the door and having a second clutch member at its inner end; a spring for forcing said shaft into clutching engagement with said first clutch member; and a movable wedge plate operable from the inside of the door for retracting said shaft to disengage the clutch members.

2. In door bolting mechanism in combination, one or more movable bolts; a rack formed on the inner end of each bolt; a rotatable shaft having a pinion meshing with each of the said racks and being mounted to have axial movement; a cylinder lock key operable from the outside of the door; means for connecting said rotatable shaft with said cylinder lock, whereby a complete rotation of said cylinder lock may be utilized for throwing each of said bolts through the medium of the pinion and each rack; and means operable from the inside of the door for disconnecting said rotatable shaft from said cylinder lock and at all times permitting the free and complete rotation of said rotatable shaft.

3. In door bolting mechanism in combination, two movable bolts designed to extend horizontally each from an intermediate portion of the door entirely across from that locality to the door jamb; rotatable means, key operable from the outside of the door; a clutch member connected to the inside portion of said rotatable means; an axially movable rotatable bolt throwing shaft provided with a hand manipulating knob for the inside of the door and having a second clutch member at its inner end; a spring for forcing said shaft into clutching engagement with said first clutch member; and a movable wedge plate operable from the inside of the door for retracting said shaft to disengage the clutch members.

4. In door bolting mechanism in combination,

two movable bolts designed to extend horizontally each from an intermediate portion of the door entirely across from that locality to the door jamb; a rotatable shaft operable from the inside of the door for throwing said bolts; a cylinder lock, key operable from the outside of the door for operating said shaft to throw said bolts; and means operable from the inside of the door for disengaging said shaft from said cylinder lock and permitting the free operation of said shaft throughout a complete rotation.

5. In door bolting mechanism in combination, two movable bolts designed to extend horizontally each from an intermediate portion of the door entirely across from that locality to the door jamb; a rack formed on the inner end of each bolt; a rotatable shaft having a pinion meshing with said racks and being mounted to have axial movement; a cylinder lock, key operable from the outside of the door; means for connecting said rotatable shaft with said cylinder lock, whereby a complete rotation of said cylinder lock may be utilized for throwing said bolts through the medium of the racks and pinion; and means operable from the inside of the door for disconnecting said rotatable shaft from said cylinder lock and at all times permitting the free and complete rotation of said rotatable shaft.

6. In door bolting mechanism in combination, a pair of bolts for extending both together entirely across the door; an exterior lock for manipulating said bolts into and out of locking position; and a jamb socket for each bolt, each jamb socket comprising, a member provided with a bolt receiving socket and having a flat plate slotted for adjustment at its outer end and to lie between the jamb and the edge of the door and a T shaped buffer plate with its tongue fitted to pass through said flat slotted plate in adjusted position against the edge of a buffer strip.

In testimony whereof, we have signed our names to this specification, in the presence of two subscribing witnesses.

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Witnesses:

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