Oct. 14, 1924. 1,511,956

E. FLAGG

LOCK MECHANISM

Filed March 19, 1923

Fig. 1.

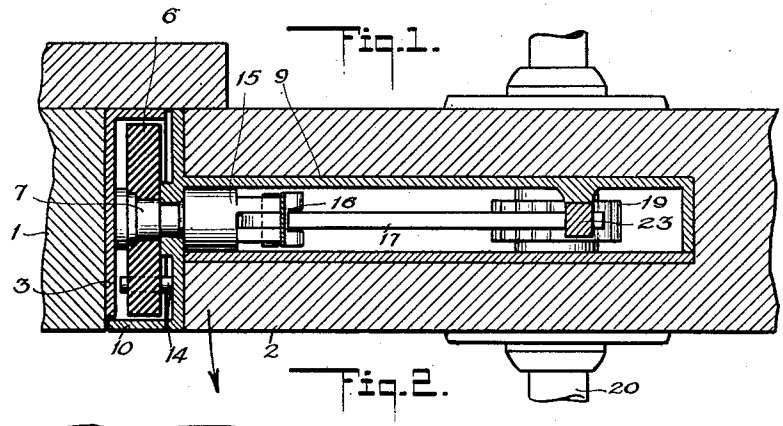


Fig. 2.

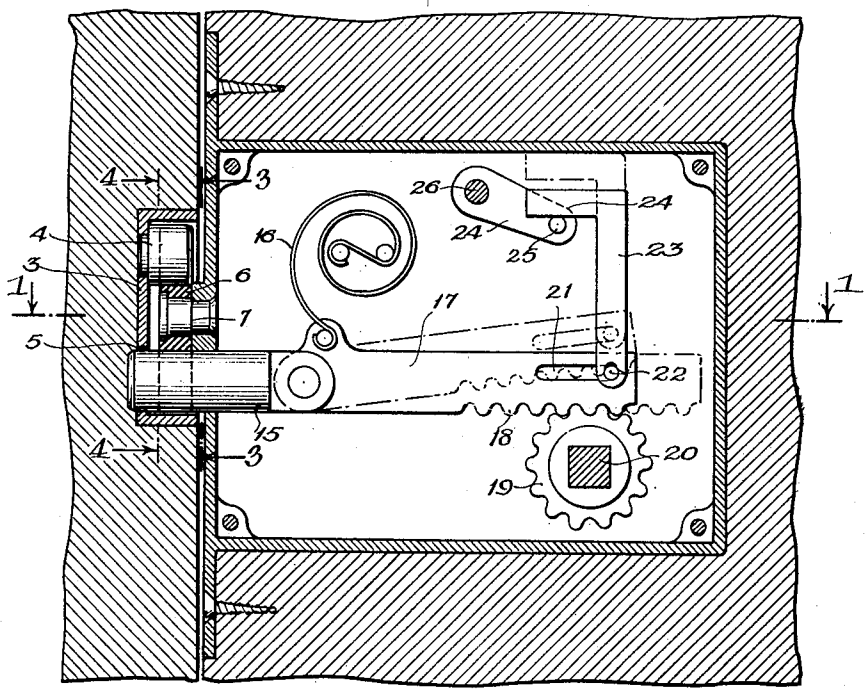


Fig. 3.

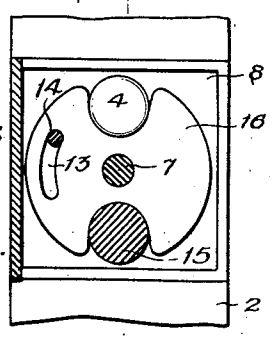
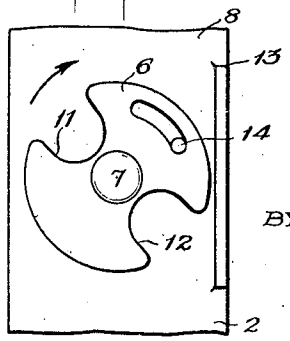


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

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LOCK MECHANISM.

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To all whom it may concern:

Be it known that I, ERNEST FLAGG, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Lock Mechanism, of which the following is a full, clear, and exact description.

This invention relates to a lock and latch mechanism specially adapted for use on doors in buildings. It has for an object the provision of a simple, economically manufactured door hardware which can be very easily applied and will operate without any liability of becoming defective or needing repair.

The invention is illustrated in the drawings, of which—

Figure 1 is a section taken on the line 1—1 of Fig. 2;

Fig. 2 is a vertical section through the door jamb and the door showing the mechanism in its locked position;

Fig. 3 is a section taken on the line 3—3 of Fig. 2; and

Fig. 4 is an end view of a part of a door in an open position.

The form of the invention shown in the drawings is a preferred form, although it is understood that modifications in the construction and arrangement of the parts and in the character of the materials used may be adopted without departing from the spirit of the invention.

The invention as shown in the drawings is related to a door jamb 1 and a door 2. It comprises a casing 3 sunk in the end of the door jamb and provided with a peg or pin 4 projecting therefrom, preferably at the top of the casing, and with an aperture 5 disposed adjacent a suitable recess in the jamb. This casing is cut away at one side, preferably that side from which the door approaches, and is adapted to receive therein when the door is closed a disk 6 rotatably mounted on a pin 7 on the end of the door. This pin 7 is journaled in an end plate 8 formed on the door and preferably forming part of a lock casing 9 which is disposed within the end of the door in the usual manner. This plate 9 is provided with a flange plate 10 which when the door is closed forms an enclosing wall for the casing 3 on the door jamb so that access cannot be had thereto when the door is closed.

The disk 6 is provided with two grooves or slots 11 and 12 therein, preferably formed on opposite sides of the disk. The disk is also provided with a grooved slot 13 into which a small pin 14 on the end of the plate 8 extends so as to limit the angular rotary movement of the disk 6. As the door is swung closed, the disk will move into the the casing 3 and the pin or peg 4 will encounter and engage with the slot 11 on the upper side of the disk 6 and will move it from the position shown in Fig. 4 to the position shown in Fig. 3. As the disk 6 is moved to the position shown in Fig. 3, the slot 12 is moved in the opposite direction to uncover the end of a bolt 15 which is mounted within the lock casing 9 and is continually bearing against the rear lower face of the disk 6. However, the lock tends to be impelled forward at all times by reason of the action of a spring 16 disposed within the lock casing and, therefore, as soon as the slot or groove 12 is moved into alinement with the end of the bolt the bolt is shot forward through the groove 12 into the aperture 5 of the casing 3, and the end of the bolt lies in the recess back of said aperture and locks the door to the jamb.

The rear end of the bolt, as disclosed in the preferred form illustrated in the drawings, is pivotally connected to an operating arm 17, and it is to a portion of this arm, near the pivot point, that the spring 16 is connected. This arm is provided with a rack 18 on one of its rear edges engageable by a gear or pinion 19 mounted on a shaft 20 which may be operated by knobs or other suitable means. Turning the shaft 20 in one direction will tend to retract the bolt against the action of the spring 16, and turning it in the other direction will, of course, throw the bolt forward. The operating arm is provided with a slot 21 in which a pin 22 rides. This pin is connected to a bar 23, the upper end 24 of which can be lifted to lift the operating arm 17 from engagement with the gear 19. This bar 23 may be operated by an actuating arm 24 having a pin 25 thereon engageable with the

end 24 of the bar 23; and this actuating arm 24 is mounted on a shaft 26 which can be operated by any suitable means (not shown), such as a key or other manual operating device. It will be observed that when the bar 23 is lifted, withdrawing the rack 18 from the gear 19, the knob shaft 20 can be thrown in either direction without in any way affecting the position of the bolt 15. If the bolt 15 is lying back of the disk 6, it will stay there and can never be pushed forward nor retracted as long as the arm 17 is left over the gear 19. Therefore, if the arm 17 is in this position when the door is closed, the disk will be moved to release the bolt, which will immediately shoot forward and lock the door to the jamb.

Furthermore, if the parts are in the position shown in Fig. 2 and it is desired to unlock the door, it is merely necessary to move the knob shaft to the right, or clockwise, whereupon the bolt will be withdrawn into the lock casing 9. When in this position, if the door is pulled away from the jamb the act of disengagement between the groove 11 and the peg 4 will move the disk again to the position shown in Fig. 4, whereby the lower side of it will move in front of the end of the bolt 15 and restrain it within the casing 9.

The invention, therefore, in general, comprises a casing on a door jamb and means on the end of the door engageable with means on the jamb casing to release a door bolt and lock the door to the jamb as soon as the door has reached its closed position. The reverse operation takes place to unlock the door, merely by turning the knob in one direction and pulling the door out of its engagement with the other parts, taking place automatically. Furthermore, by operating a simple lock mechanism, the knobs and their shafts can be turned around in any direction without affecting the condition of the door, either its locked or its unlocked condition. This device, therefore, can be used as a latch merely by shutting the door, which will be positively held but can be very easily released. On the other hand, it can be converted into a positive lock by disengaging the arm 17 from the gear 19 in the manner above described.

It will, therefore, be understood that by providing a door jamb with a receptacle containing a projecting member projecting in the path of the door and with a recess to receive a door bolt, and by providing on the end of the door a movable member which has a normal position restraining the door bolt within the door, and which movable member as the door is closed engages with the projecting member on a jamb and is thereby moved to such a position that the bolt will be released, I have provided a simple and efficient mechanism which is substantially automatic in its operation. Also, by providing means for retracting the door bolt, which when retracted can be further utilized to open the door, whereupon the bolt will be automatically locked in its retracted position, the device is made exceedingly simple and efficient. An easily operated device is further provided whereby the bolt retracting means can be disconnected either by a key-operated means or other device.

What I claim is:—

1. A lock mechanism for doors, which includes a projection on a door jamb, said jamb having a bolt-receiving socket therein, a movable member on the end of the door normally lying in the path of the bolt to restrain the bolt in a retracted position, said movable member engageable with the projecting member on the jamb when the door is closed to move the member on the door out of the path of the bolt, and means for projecting the bolt into said socket when so released.

2. A lock mechanism which comprises a casing to be disposed in the end of a door, a movable plate on the end of the door having a slot therein, a bolt within the casing, said plate normally disposed in the path of the bolt, and means tending to project the bolt forward against the plate, said plate having a second slot adapted to be engaged by means on the door jamb when the door is closed to move the plate and release the bolt.

3. A lock mechanism which includes a casing to be disposed on the end of a door, a rotatable disk on the end of said casing having a pair of slots oppositely disposed thereon, said casing having an aperture, a bolt within said casing adapted to be moved through said aperture, and means tending to project the bolt forward through said aperture, said disk being capable of movement to aline one of its slots with the aperture in the casing, whereby the bolt may be moved forward to project from the casing.

4. A lock mechanism which includes a casing to be disposed on the end of a door, a bolt projectable through the end of said casing, an operating arm pivoted to the rear end of said bolt, a spring connected to said arm and tending normally to project the bolt forward, a rack on said arm, a knob-operated gear engaging with said rack to move the bolt in one direction or another, and a manually operated lever or arm connected to said operating arm and capable of movement to disengage the rack from the gear.

5. A lock mechanism which includes a casing disposed on the end of a door, a bolt within said casing and projectable therethrough, a rotatable plate on the end of said casing having a portion to be disposed in the path of the bolt to restrain the same within the casing, a pair of slots on said

disk, one of which can be alined with the path of the bolt to permit the projection thereof from the casing, a second casing on the door jamb, a projecting member thereon engageable with the other slot of said disk as the door is closed to move the disk whereby the second slot therein is alined with the bolt, said jamb having a bolt-receiving socket, and means within the casing on the door to project the bolt into said socket on the jamb as the bolt is released for movement.

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