H. L. EWING.

SLIDING DOOR LOCK.

APPLICATION FILED JAN. 24, 1912.

1,034,699.

Patented Aug. 6, 1912.

2 SHEETS—SHEET 1.

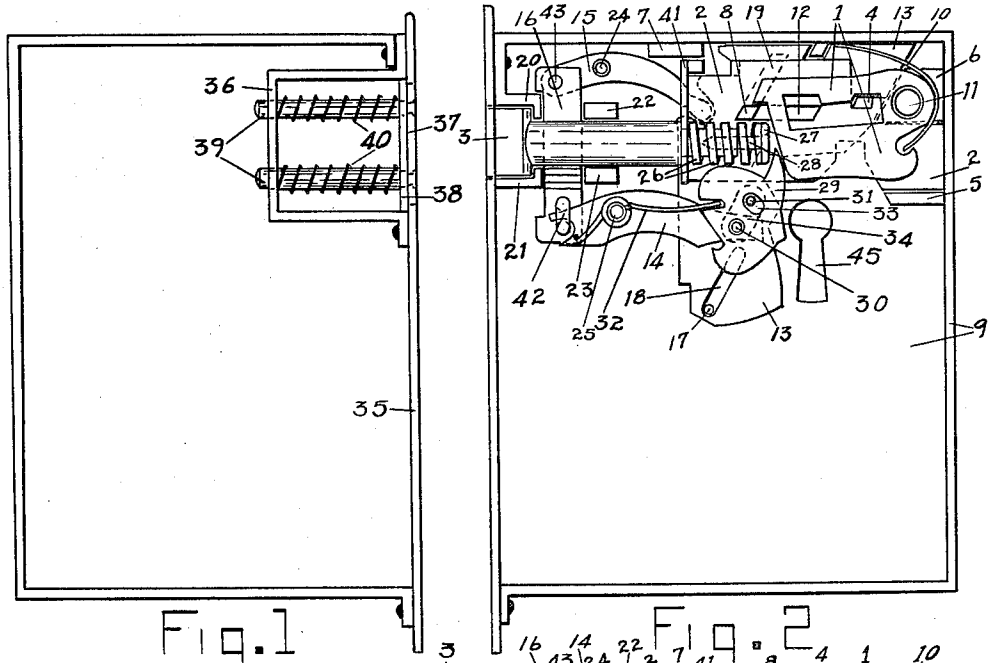

Fig. 1

Fig. 2

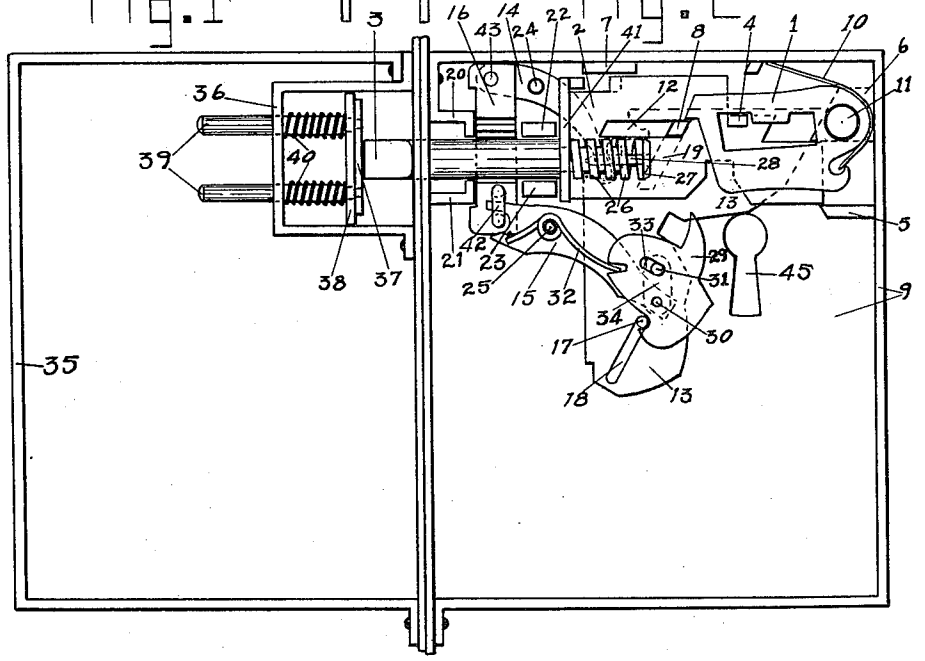

Fig. 3

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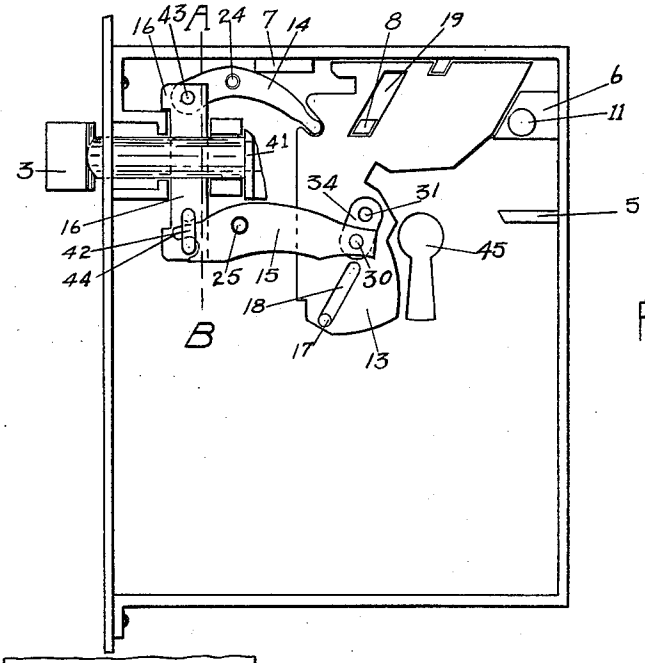

Fig. 4

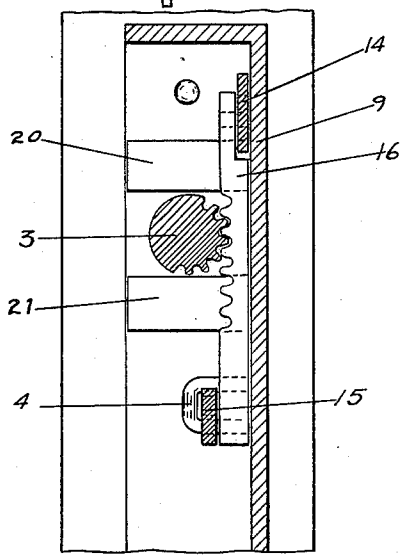

Fig. 5

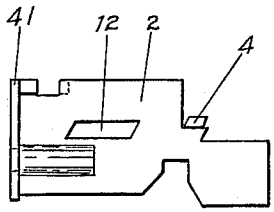

Fig. 6

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UNITED STATES PATENT OFFICE.

HARRY L. EWING, OF DALLAS, TEXAS.

SLIDING-DOOR LOCK.

1,034,699. Specification of Letters Patent. Patented Aug. 6, 1912.

Application filed January 24, 1912. Serial No. 673,189.

To all whom it may concern:

Be it known that I, HARRY L. EWING, citizen of the United States, residing at Dallas, in the county of Dallas and State of Texas, have invented certain new and useful Improvements in Sliding-Door Locks, of which the following is a specification.

This invention relates to a mechanism employed to lock a door, constructed to slide or otherwise move in a direction parallel to the plane of said door, to another such door or to a stationary part, such as a door frame.

The objects of this invention are; first, to provide a lock which will positively fasten two structures together; second, to provide a lock which will operate even though the two members of the lock are slightly out of alinement vertically; third, to provide a lock which cannot be unlocked by moving one member of the lock vertically past the other member. These objects are secured by combining an ordinary system of locking levers and plates with a bolt having a T head, and arranged; first, to slide in the direction of its axis until the head has entered the receiving member of lock; and second, to rotate through an arc of ninety degrees, and thereby cause the longer dimension of the head of said bolt to lie in the direction of the shorter dimension of the opening in the receiving member.

Reference will now be made to the accompanying drawings in which like characters refer to like parts.

Figure 1 is a side elevation of that member of the lock which receives the bolt head, omitting the cover plate thereof. Fig. 2 is a side elevation of that member of the lock which contains the bolt and locking mechanism, the same being shown in an unlocked position with cover plate omitted. Fig. 3 is a side elevation of the two members of the lock shown in a locked position, the cover plates being omitted. Fig. 4 is a detail side elevation showing the under plate and various other parts of the mechanism hereinafter described. Fig. 5 is a detail sectional view taken on the line A. B. of Fig. 4. Fig. 6 is a detail view of the plate which is joined to the bolt and which moves said bolt in the direction of its axis.

The locking mechanism now to be described in detail consists of two parts or members, each of which comprises a main casting embodying various lugs and posts, on which the locking mechanism is mounted as follows: Referring to the various figures, the plates 1 and 2 are similar to those used in the ordinary sliding-door lock mechanism, the plate 2 is attached to bolt 3 by a swivel connection, and the tumbler 1 is employed to hold the plate 2 either in a locked or an unlocked position by engaging a projection 4 on the plate 2. The tumbler 1 is pivoted on the post 11, and is held in position by the spring 10 and the post 8. The plate 2 is guided in its movement by the lugs 5, 6 and 7, also by the post 8, all of which are embodied in the main casting or frame work 9 of the lock, a slot 12 in the plate 2 being provided to receive the post 8. The plate 13 is employed to operate the levers 14 and 15 pivoted respectively on the posts 24 and 25, which posts are embodied in the main casting 9, said levers 14 and 15 giving to the toothed rack 16 a motion transverse with the axis of the bolt 3. The plate 13 is guided in its motion by the lug 6 and by the posts 8 and 17, the slots 18 and 19 in the plate 13 being adapted to receive the posts 8 and 17 respectively. The rack 16, guided in its motion by the lugs 20, 21, 22 and 23, engages a segment of toothed pinion embodied in the bolt 3, a detailed section of which is shown in Fig. 5. The above mentioned lugs 20, 21, 22 and 23 are embodied in the main casting 9. The bolt 3 is joined to the plate 2 by a swivel connection, said connection being made by extending the bolt 3 through a projection 41 of plate 2, also partly through the compression spring 26, and by joining said extension to the cap piece 27 by means of the screw 28. The extension on bolt 3, above mentioned, is somewhat smaller than the body of the bolt, and thereby forms a shoulder which bears against the projection 41. The above-mentioned screw 28 and the cap piece 27 are employed to compress spring 26, and thereby hold the shoulder on bolt 3 against the projection 41 of the plate 2 in a resilient manner. The plate 13 is locked in the position shown in Fig. 3 by the plate 29, which is pivoted on the pin 30 attached to the lower extremity of the lever 15, and which is restricted in its movement by the spring 32 also the pin and slot 31 and 33 respectively.

Figs. 4 and 5 show the construction and operation of the plate 13, together with the levers 14 and 15, also the rack 16 and the bolt 3. The connection of lever 15, pivoted on the post 25, with the plate 13, is by means

of the pin 30, the link 34, and the pin 31, and with rack 16 by means of the yoke 42 and the finger 44, forming a sliding connection with said rack. The connection of the lever 14, pivoted on the post 24, with the plate 13 is by a modified ball and socket joint, and with the rack 16 by use of the pin 43.

Fig. 5 shows the construction and operation of the rack 16 and the segment 3, said segment being embodied in the bolt, as heretofore described. The rack and the segment together are employed to rotate the bolt through an arc of 90 degrees. The segment extends over about 180 degrees of the circumference of the bolt, and the greater portion of the length of the body of the bolt, to permit said bolt to move in the direction of its axis.

The keeper of the lock, shown in Fig. 1, and forming the left half of Fig. 3, consists of a main casting or frame 35, to which is attached the pocket frame 36, inclosing the flush plate 37, the guide plate or plunger 38 and the guiding stems 39, around which the compression springs 40 are placed, said springs tending to force the plunger and the face plate into the position shown in Fig. 1.

The following is an enumeration of the consecutive movements in the operation of the lock: A suitable key having been introduced and turned in a counter clockwise direction, the blade of said key first lifts the tumbler 1, Fig. 2, thereby releasing the projection 4 on the plate 2; then engages the plate 2, causing it and the bolt 3 to move in the direction of the axis of said bolt until the head of the bolt has entered the pocket in the receiving member of the lock, forcing the flush plate and the plunger to the position shown in Fig. 3. Next the blade of the key engages the plates 29 and 13 causing the plate 13 to move downwardly in a diagonal direction, thereby actuating the levers 14 and 15, which in turn cause the rack 16 to move in a direction at right angles to the axis of the bolt, which movement causes the segment to turn through the required arc of 90 degrees. Finally, the blade of the key releases the plate 29, said plate moves to the position shown in Fig. 3, engaging the post 17 and thereby effectually locking the mechanism.

It is obvious that various changes may be made in the form and proportion of parts and details of the above-described invention, without departing from the spirit or sacrificing any advantage thereof, and the device is therefore presented as including all such modifications as come within the scope of the following claims.

What I claim is:

1. In a sliding-door lock of the character described in combination, a T headed bolt attached to a slidable plate by a swivel connection, means for moving said plate and bolt in the direction of the axis of the bolt, means for subjecting the bolt to a partial revolution about its axis and means for securing the bolt in the locked position, all of said means being key-operated.

2. In a sliding-door lock of the character described in combination a T headed bolt attached to a slidable plate by a swivel connection, means for moving said plate and bolt in the direction of the axis of the bolt, a segment of a pinion embodied in said bolt, a rack arranged to engage said segment, means for giving the rack a motion transverse with the axis of the bolt and thereby moving same through a partial revolution to a locked position, all of said means being key-operated.

3. In a sliding-door lock of the character described in combination, a T headed bolt attached to a slidable plate by a swivel connection, means for moving said plate and bolt in the direction of the axis of said bolt, means for revolving said bolt through a partial revolution to a locked position, a locking plate, which, after the blade of the key has passed, engages a stationary post, and thereby effectually securing the means used to rotate the bolt, all of said means being key-operated.

4. In a sliding-door lock of the character described in combination, a receiving member arranged to receive a T headed bolt, which, after entering said receiving member is adapted to rotate through a partial revolution to a locked position, a rectangular opening through which the head of the bolt enters, and of such dimensions that the bolt cannot be withdrawn after being rotated through a partial revolution, and means for closing said rectangular opening when the head of the bolt is withdrawn.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HARRY L. EWING.

Witnesses:
J. S. MURRAY,
D. C. RAMSEY.