July 29, 1952 C. A. HILLGREN 2,605,124

LATCH

Filed April 10, 1948

Fig. 1.

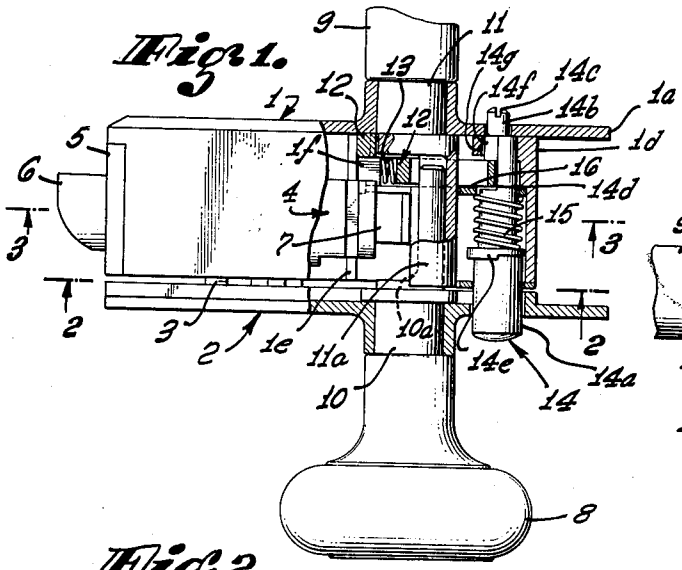


Fig. 5.

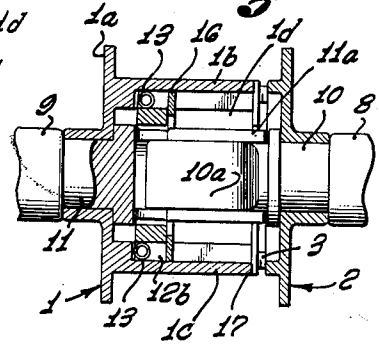


Fig. 2.

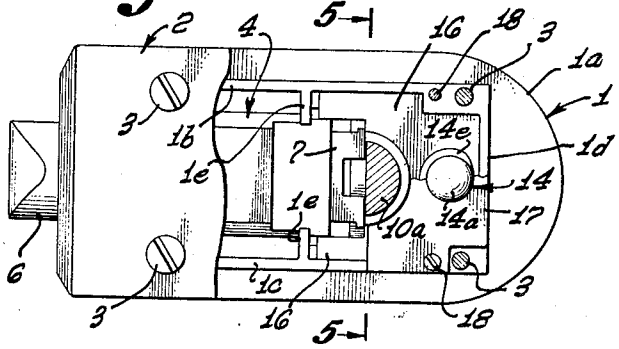


Fig. 6.

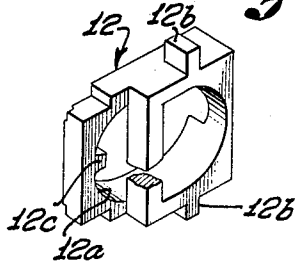


Fig. 7.

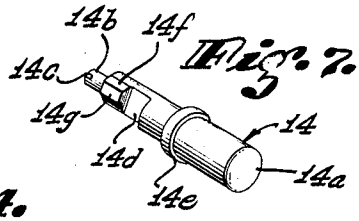


Fig. 3.

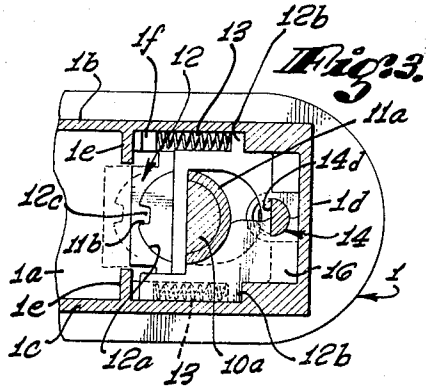
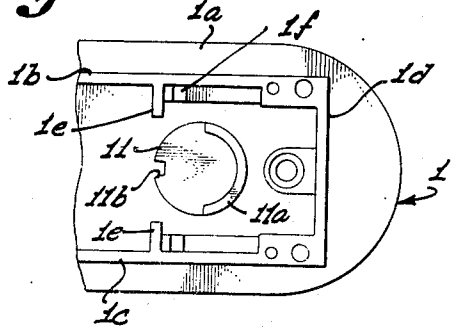


Fig. 4.



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UNITED STATES PATENT OFFICE

2,605,124

LATCH

Carl A. Hillgren, Los Angeles, Calif.

Application April 10, 1948, Serial No. 20,201

2 Claims. (Cl. 292—169)

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My invention relates to locks, and particularly to means for locking, from one side of the door, the spindle mechanism at the opposite side of the door.

One of the principal objects of this invention is to provide a novel lock of this class for locking from one side of the door, in which the lock is mounted, the lock-operating means or spindle at the opposite side of the door, particularly for locking the door of one room to prevent access readily thereinto from another room, but which is so constructed as to permit access into the first room by unconventional means, that is, by means other than the usual knob or other ordinary lock-operating means.

Another important object of this invention is to provide a spring-pressed plunger in the lock casing adjacent the knob of the lock, which may be easily depressed from one side of the door for locking the door from such side, and in which the plunger may be readily released by the operation of the usual knob, and a structure of this class in which the plunger may be readily rotated from the other side of the door and permitted automatically to be returned to its original position for leasing the knob at the opposite side of the door, so as to permit the latter to be freely rotated to operate the lock.

Another important object of this invention is to provide a simple means for engaging the lock spindle at the outer side of the door and relatively simple and novel means in the form of a spring-pressed plunger for shifting the former means into and out of engagement with said spindle.

An important object also of this invention is the provision of a spindle-locking plunger which, when depressed from one side of the door, causes locking of the knob at the opposite side of the door, and which requires rotation of the plunger from the latter side of the door to permit the same to be spring-pressed to its original position, to permit unlocking of the spindle for operating the lock from said opposite side of the door.

A further important object of this invention is to provide a lock of this class which may be readily installed in the edge of a door.

With these and other objects in view, as will appear hereinafter, I have devised a lock having certain novel features of construction, combination, and arrangement of parts and portions, as will be hereinafter described in detail, and particularly set forth in the appended claims, reference being had to the accompanying drawings and to the characters of reference thereon, which form a part of this application, in which:

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Fig. 1 is a partial longitudinal sectional and partial plan view of my lock, in a preferred form of construction, mounted in the edge of a door, the view being shown on a plane transverse to the door;

Fig. 2 is a partial sectional and partial elevational view thereof, taken at 2—2 of Fig. 1, portions being shown broken away to facilitate the illustration;

Fig. 3 is a fragmentary sectional view, taken through 3—3 of Fig. 1, also showing portions broken away to facilitate the illustration, and showing by dotted lines certain parts in moved positions;

Fig. 4 is a view similar to that of Fig. 3, but showing only one side of the lock casing and the spindle mounted therein;

Fig. 5 is a transverse sectional view thereof, taken through 5—5 of Fig. 2;

Fig. 6 is a perspective view of the spindle-locking member, also showing a portion thereof broken away and in section to facilitate the illustration; and

Fig. 7, is a perspective view of the plunger for controlling the shifting of the spindle-locking member of Fig. 6.

The casing of my lock, as illustrated in the drawings, and the manner of securing the same to a door is substantially the same as that of my lock shown and described in United States patent application for Letters Patent, Serial No. 774,235, filed September 16, 1947, now Patent 2,533,582, issued December 12, 1950.

The casing consists of a casing member 1 and a casing cover member 2. The casing member 1 comprises an outer plate 1^a providing the outer escutcheon plate for the lock, a top wall 1^b, a bottom wall 1^c, and an end wall 1^d, all three walls extending inwardly from the inner side of the escutcheon plate 1^a. The member 2 forms the inner escutcheon plate and is secured to the inner or open side of the casing by means of screws 3 which extend into the edges of the top and bottom walls.

Within the casing at one end portion thereof is mounted a latch-bolt assembly contained within a tubular case 4. This case is held in position by guide flanges 1^e extending inwardly from the top and bottom walls 1^b and 1^c, respectively, at right angles to the axis of the case 4. The case is provided at its outer end with a flange 5, providing a rectangular plate which closes the outer end of the lock casing disposed between the outer ends of the escutcheon plates 1^a and 2 and between the upper and lower walls 1^b and 1^c.

Within the tubular case 4 is reciprocally

mounted a bolt 6 which extends through the outer plate 5, and a bolt actuating element 7 which extends axially through the rear end of the case 4. The bolt 6 and actuating element 7 are operatively connected by a pivot or rocker so that the bolt 6 is withdrawn, that is, drawn inwardly, when the actuating member 7 is forced outwardly, as illustrated and described in my copending patent application, Serial No. 608,160, filed August 1, 1945, now Patent Number 2,544,959, issued March 13, 1951, and entitled Lock, to which reference is made for a detailed description thereof.

The bolt 6 of the latch-bolt assembly is operated by knobs 8 and 9, respectively, at the inner and outer sides of the door in which the lock is mounted. The knobs 8 and 9, respectively, have axially inwardly extending spindles 10 and 11 which overlap each other at their inner ends, the inner end of the outer spindle 11 comprising a semi-cylindrical shell 11a which is positioned around the inner side of the spindle 10, which is of semi-circular cross-section, as indicated by 10a. The diametrically opposite portions or edges of the semi-cylindrical spindle engages the upper and lower portions of the inner end of the bolt-actuating member 7, as shown in Fig. 2. The diametrically opposite portions of the inner end of the spindle 10 are also adapted to engage the opposite portions of the inner end of the bolt-actuating member 7, as also indicated in this figure.

Against the inner side of the escutcheon plate 1a of the casing member 1 is slidably mounted a locking member 12 having a central opening 12a in the form of an elongated circle, through which the inner end of the spindle 11 extends. This locking member is adapted to slide in a direction parallel to the longitudinal axis of the lock. It is guided at its forward end between the flanges 1e and its rear end by laterally extending lugs 12b, which may engage the inner sides of the top and bottom plates 1b and 1c, respectively, as shown best in Fig. 3. The locking member is normally urged in its rearward position by springs 13 which are located between the locking member and the walls of the casing member 1. The ends of the springs impinge against the lugs 12b of the locking member and lugs 1f which extend inwardly from the inner ends of the flanges 1e of the casing member 1. When the locking member 12 is urged inwardly by the springs 13, a key 12c extending inwardly from the outer portion of the opening 12a is adapted to be seated within a keyway 11b at the forward side of the spindle 11 immediately adjacent the inner side of the escutcheon plate 1a, as shown in Figs 1 and 3.

In the normal operating condition of the lock, the locking member 12 is in a forward position, as shown by dotted lines in Fig. 3, with the key 12c withdrawn from the keyway 11b. This permits both knobs to be rotated for drawing inwardly the bolt 6. In a locked position, however, the locking member is in its solid line position, which prevents the outer knob 9 from being operated and permits only the inner knob 8 to draw the bolt 6 inwardly.

The locking member 12 is held in the unlocked position, shown by dotted lines in Fig. 3, and the locked position, shown by solid lines, by a spring-pressed plunger 14 which is reciprocally mounted in a longitudinal direction, parallel to the axes of the spindles and inwardly from the spindles with respect to the edge of the door. The inner end 14a of the plunger extends through the inner escutcheon plate 2, and the inner end thereof is positioned adjacent the inner side of the inner knob 8. The opposite end of the plunger is reduced, as indicated by 14b, and this reduced portion extends through the outer escutcheon plate 1a. The outer end of the reduced portion 14b has a transverse slot 14c whereby the plunger may be rotated. On the forward side of the plunger is a transverse slot 14d into which the rear end of the locking slide extends so as to permit the key 12c to enter the keyway 11b.

In its normal position, when the locking slide is shifted to its dotted line position, shown in Fig. 3, the plunger is urged outwardly by means of a spring 15 positioned around the plunger and located between a collar 14e of the plunger and a locking-member retaining plate 16 positioned at the side of the locking member opposite the escutcheon plate 1a. At the portion of the plunger immediately inwardly from the reduced portion 14b is a partially polygonally-shaped portion 14f having a flat side 14g, which, when located behind the locking member 12, is sufficient to unseat the key 12c from the keyway 11b to permit rotation of the outer knob, and this flat portion 14g is resiliently held behind the rear end of the locking member by the spring 15. By this means, the plunger is retained in the angular position to effect alignment of its notch 14d with the end of the locking member when the plunger is pressed inwardly.

When desiring to permit the locking member to be shifted to its locking position, the plunger 14 is forced inwardly from the inner knob 8 until the polygonally-shaped portion 14f is shifted beyond the locking member and allows the latter to fall into the transverse slot 14d. The shoulder provided at the adjacent end of the polygonally-shaped portion 14f engages the outer side of the locking member and prevents the spring 15 from dislodging the locking member from the slot, and prevents the plunger from being forced toward the inner knob.

In order to unlock the lock from the outside of the room, such as from the outside of a bathroom, a screw driver may be employed for rotating the plunger in either direction until the cam edges at the flat side of the slot 14d cam the locking member to an unlocked position, which permits the spring 15 to force the plunger toward the inner knob, thereby again conditioning the lock so that it may be normally operated from both sides of the door.

The collar 14e referred to above is limited by a retaining plate 17 when the plunger is forced towards the inner knob 8 by the compression spring 15. The retaining plate 17 is secured to the edges of the top and bottom walls of the casing by screws 18, shown in Fig. 2.

I wish it to be understood that I do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

I claim:

1. In a latch structure, a casing having side walls and end portions, a single spring actuated latch bolt projecting from one end portion of the casing and adapted for movement from a normally extended position to a retracted position, a first spindle rotatably mounted in said casing and extending from one side wall of the casing, a second spindle rotatably mounted in said casing and extending from the other side wall of the casing, means on each spindle engage-

able with the latch bolt for operating the same to retracted position, a locking member independent of said latch bolt mounted in said casing for movement in a direction substantially normal to the axis of said first spindle, means on said locking member engageable with said first spindle to interlock therewith when said locking member is moved in one direction to prevent rotation of said first spindle, a spring pressed plunger reciprocably and rotatably mounted in the walls of said casing between said first spindle and the other end portion of the casing in spaced relation to said first spindle and positioned in the path of said locking member for normally retaining said locking member in inoperative position, said plunger being provided with a notch for receiving the edge of said locking member adjacent said other end portion of said casing to allow said locking member to engage said first spindle for preventing rotation of said first spindle.

2. In a latch structure, a casing having side walls and end portions, a single spring actuated latch bolt projecting from one end portion of the casing and adapted for movement from a normally extended position to a retracted position, a first spindle rotatably mounted in said casing and extending from one side wall of the casing, a second spindle rotatably mounted in said casing and extending from the other side wall of the casing, means on each spindle engageable with the latch bolt for operating the same to retracted position, a locking member independent of said latch bolt mounted in said casing for movement in a direction substantially normal to the axis of said first spindle, means on said locking member engageable with said first spindle to interlock therewith when said locking member is moved in one direction to prevent rotation of said first spindle, a spring pressed plunger reciprocably and rotatably mounted in the walls of said casing, between said first spindle and the other end portion of the casing in spaced relation to said first spindle and positioned in the path of said locking member for normally retaining said locking member in inoperative position, said plunger being provided with a notch for receiving the edge of said locking member adjacent said other end portion of said casing to allow said locking member to engage said first spindle for preventing rotation of said first spindle, said plunger having a flattened surface on the side thereof adjacent the notch for engaging said locking member for retaining said locking member in inoperative position while retaining said plunger in position to be slid into locking position.

CARL A. HILLGREN.

REFERENCES CITED

The following references are of record in the file of this patent:

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