

F. HEGNER.

Improvement in Locking Knob Latches.

No. 125,734.

Patented April 16, 1872.

Fig. 1.

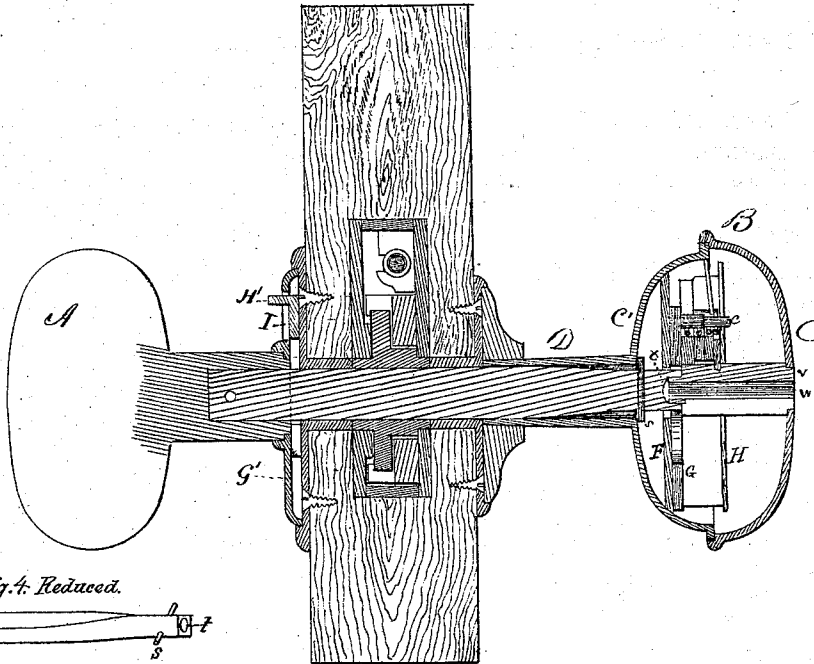


Fig. 4. Reduced.

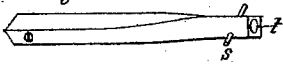


Fig. 11.

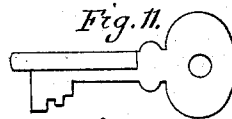


Fig. 2.

Fig. 3.

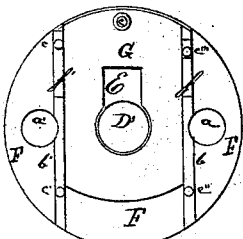


Fig. 9. Reduced.

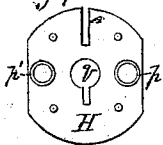


Fig. 5.



Fig. 6.

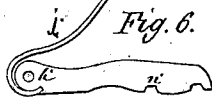


Fig. 7.

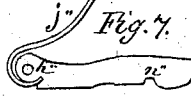


Fig. 8.

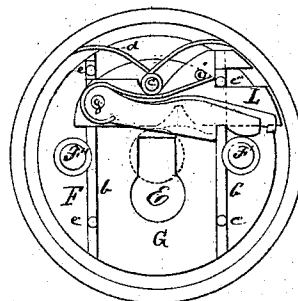


Fig. 10. Reduced.

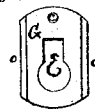


Fig. 12.

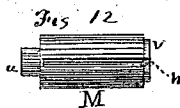


Fig. 13.



Witnesses.

William Standish

Anthony Hegner

Inventor.

Francis Hegner.

UNITED STATES PATENT OFFICE.

FRANCIS HEGNER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN LOCKING KNOB-LATCHES.

Specification forming part of Letters Patent No. 125,734, dated April 16, 1872.

SPECIFICATION.

I, FRANCIS HEGNER, of Boston, in the Commonwealth of Massachusetts, have invented certain Improvements in Locks, of which the following is a specification:

Nature and Objects of the Invention.

This invention relates to that class of door-locks called "mortise-locks," in which the catch or latch is operated by a spindle, which is, in turn, moved by the knobs, though the invention may readily be applied to other locks. In this lock I dispense with the usual lock-bolt, the one catch being sufficient, and the whole locking mechanism is contained within one of the knobs, the mechanism within the door being only what is required and commonly used in advancing and retracting the catch with the turning of the spindle. The main object of my invention is to construct within the knob a device that will serve as a lock by bringing the spindle within or withdrawing it from the influence of the revolutions of the knob. I accomplish this, mostly, by employing the catch as a lock-bolt, by working this catch by the spindle, and by throwing the spindle within or without the influence of the knob by means of mechanism moved by the key.

The first part of my invention consists in making the orifice in the shank of the knob containing the lock round, and of such diameter as will permit it to turn on the square spindle with which the bolt is operated. The knob is held upon the spindle by a pin inside the knob. The second part of my invention relates to the mode of subjecting the spindle to the control of the knob. This is done by means of a locking-plate located within the knob, having in it a slot, square at one end and of the size to fit the square of the spindle, and round at the other and large enough to turn freely on the spindle. This locking-plate is held to the knob, but slides up and down in it under the influence of the key. The spindle passes through this slot, and as the locking-plate is moved so that the square end of the slot embraces the spindle, it (the spindle) will turn with the knob; or, as the round end of the slot encompasses it, it is released from the knob, which again turns freely and does not affect the spindle.

It should be stated that in my drawing I

have presented a lock wherein one knob (the outside) turns freely on the spindle unless the locking-plate is employed, and the other knob grasps and turns the spindle, being fixed permanently thereon.

Description of the Drawing.

Figure 1 is a vertical transverse section of door and entire lock, with the knobs. Fig. 2 is an inner face view of the locking-knob and its mechanism. Fig. 3 is an inner face view of the sliding locking-plate and the disk which supports it. Fig. 4 is a perspective view of the knob-spindle. One end is turned one-eighth from the right lines, to insure that the key-hole should be vertical or horizontal. Figs. 5, 6, and 7 are spring tumblers or guards, employed to guard the sliding plate of the lock. Fig. 8 is the sliding plate, which moves the locking-plate. Fig. 9 is the key-hole plate, used to protect and keep in place the various members of the lock mechanism. Fig. 10 is the sliding locking-plate, which encompasses the spindle. Fig. 11 is the key. Fig. 12 is a cylindrical key-block, having at one end a tenon fitting a mortise in the end of the spindle, and at the other another tenon, fitting a hole in the knob, and having a key-hole extending nearly through it longitudinally. Fig. 13 is a view of the outer end of (Fig. 12) said key-block.

A is the knob of the door, fixed fast upon the spindle. This I treat, in my explanations, as being on the inside of the door; but it may be used on either side. B is the knob that contains the locking apparatus. This is divided in two parts by a vertical line near the middle. The parts fit together, and are held in place by screws or other means. C is the outer part of the shell of said knob. This has in the center a circular orifice to admit the tenon of the key-block, and a narrow slot extending outward from said orifice, so placed as to coincide with the slot in the key-block, and with it form the key-hole. C' is the inner part of said shell adjoining the shank, and contains the locking mechanism. D is the shank of the said knob, through which the spindle passes. The orifice in this is round, and so large as to permit the knob to revolve freely on the spindle. D' is a corresponding orifice in the disk F, Fig. 3. E is a slot in the locking-plate G,

(Fig. 10,) one end of which is round and like D' in dimensions; the other end is square, and of a size to grasp the spindle. As the spindle passes through this, when the locking-plate G , Fig. 10, is moved, so that the square end of the slot embraces the spindle, it will, in turning, turn the spindle, and, when the round end of the slot encompasses it, they will turn independently of each other. F' F'' are two corresponding pipes, hollow cylinders, or standards, secured to and projecting at right lines, from the inside bottom of the shell C' , passing through the holes a and a' in the said disk F , Fig. 3, and through the holes p p' in the guard or key-hole plate H , Fig. 9. Through these pipes the screws pass that hold the two shells C and C' together. G' is a guard-plate or washer on the inside of the door, through which the spindle passes. This is raised from the door and made hollow, with room enough for a plate like the locking-plate G to slide back and forth in it. In this last-named sliding plate is an orifice like E , through which the spindle passes. H' is a pin attached to said sliding plate, and projecting out through a slot, I , in said guard-plate G' . I is said last-named slot, extending in a line with the radius of said plate.

When this pin H' is moved toward the spindle, it moves the said sliding plate so that the square end of the orifice therein will grasp the spindle and prevent either that or the knob from turning. When the pin is moved from the spindle it brings the spindle within the round end of the orifice, and the knob and spindle may then be turned and the catch of the door withdrawn. This is the means of making fast the door from the inside.

a a' are holes in the disk F , Figs. 2 and 3, through which the pipes F' and F'' pass. b b' are two parallel guide-bars, fixed upon the face of said disk F at each side of the orifice D' . Where these join the disk there is in each a groove, on the inside, in which the beveled edges o o of the locking-plate G slide. Within these the said plate is held and subjected to the turning of the knob. c is a pin, projecting from the upper part of the face of said locking-plate G , Fig. 10, which passes through or otherwise holds a spring, d , which presses and keeps said locking-plate so far down that the square end of the slot E embraces the spindle and subjects it to the motions of the knob. e e' e'' e''' are posts rising out of said guide-bars b and b' , and which pass through the key-hole plate H , Fig. 9, and aid to keep it in place. f f' are recesses cut in said guide-bars b b' , in which the sliding plate L , Fig. 8, traverses under the influence of the key. g is a pin, projecting from the face of the left-hand end of said sliding plate, upon which the spring-tumblers, Figs. 5, 6, and 7, are hinged by means of holes h h' h'' in said tumblers. i is a second pin, projecting from the face of said sliding plate, Fig. 8, at the right hand of the middle, against which are held the springs j j'' upon said spring-tumblers, which press

them against the lower shoulder of the recess f . k is a slot in the right-hand end of the sliding plate L , Fig. 8, made to inclose the post e''' , which serves as a stud to guide and support said plate. l is a notch on the under side of said sliding plate L , into which the key takes, and in turning moves said plate to the right or left. m is an incline on the upper side and near the middle of said plate, rising from the left toward the right, where it terminates on an upper horizontal line of said plate. Against this incline the pin c on the locking-plate G is pressed by the spring d .

As the sliding plate L is moved to the left by the key, the said locking-plate G is borne upward against the force of said spring by the said incline forcing upward the pin c . As the sliding plate L is moved to the right, the locking-plate G is moved downward by the pressure of said spring d . This incline must be of such form and dimensions as to move the locking-plate so far as to embrace the spindle within the square end of the slot E when at one side, and within the round end when at the other.

n n' n'' n''' are notches cut in the lower sides of the spring-tumblers, Figs. 5, 6, and 7, which, catching upon the lower shoulder of the recess f , lock the sliding plate L in its position until they are released by the action of the key. o o are beveled sides of the locking-plate G , Fig. 10, chamfered to an edge, to fit the groove in the inside of the bars b and b' . These beveled edges, fitting into said grooves, keep the locking-plate in place. The same thing may be accomplished by pins or other devices. q is a hole in the key-hole plate, through which the key-block M passes. This is round, with an elongated slot projecting downward from its circumference. As the key is inserted in the block M , the longer wards of the bit pass through this slot. r is a slot in the upper part of said key-hole plate, in which the pin c moves as the locking-plate G is moved up and down. s is a pin, passed through the spindle inside the knob B and under the disk F , for holding the spindle and knob together. t is a circular mortise in the end of said spindle, into which a round tenon, u , on the inner end of the key-block M fits. v is a shorter tenon, on the outer end of the key-block M , made to fit a hole in the center of the shell C . This tenon with its shoulder bears against the edges and inside of the shell C . While the shell keeps the key-block in position with its two tenons in their respective places, it may be easily turned round by the key. w is a slot in the key-block, to receive the key. The shape is not important, only it must be so formed that the key will turn the key-block.

Mode of Operation.

When the lock is in its normal position on the door, the locking-plate G is down, and the square end of the slot E grasps the spindle so that it moves with the knob. To lock the door, the key is turned, and the key-block moves

with it; the various wards of the key lift the spring-tumblers against the springs and release the notches *n n' n''* from their bearings against the shoulder of the recess *f*. This will permit the sliding plate *L* to be carried to the left by the ward of the key taking into the notch *l*. The spring-tumblers are, of course, carried to the left with the sliding plate. This movement of the sliding plate forces the pin *c* along the incline *m* to the horizontal line, bearing the locking-plate *G* upward until the round end of the slot *E* is brought to encompass the spindle. The knob now no longer controls the spindle, and the latch cannot be withdrawn by any manipulation of the knob. The pin *c*, resting upon the horizontal upper edge of the sliding plate *L*, holds the locking-plate *G* in its place until the key is again applied.

All the tumblers and their relations to the

key are old, or modifications of old devices, and I make no claim for them. So, also, I do not claim any form or mode of construction of my devices, save as hereinafter specifically set forth.

I claim and desire to secure by Letters Patent—

1. The locking-plate *G* within the knob, in combination with the spindle, whereby the knob is connected with or released from the spindle.

2. The combination of a spindle having three or more sides with a knob containing the lock, and having the hole in the shank so shaped that the knob may revolve freely on the spindle.

FRANCIS HEGNER.

Witnesses:

WILLIAM STANDISH,
ANTHONY P. HEGNER.