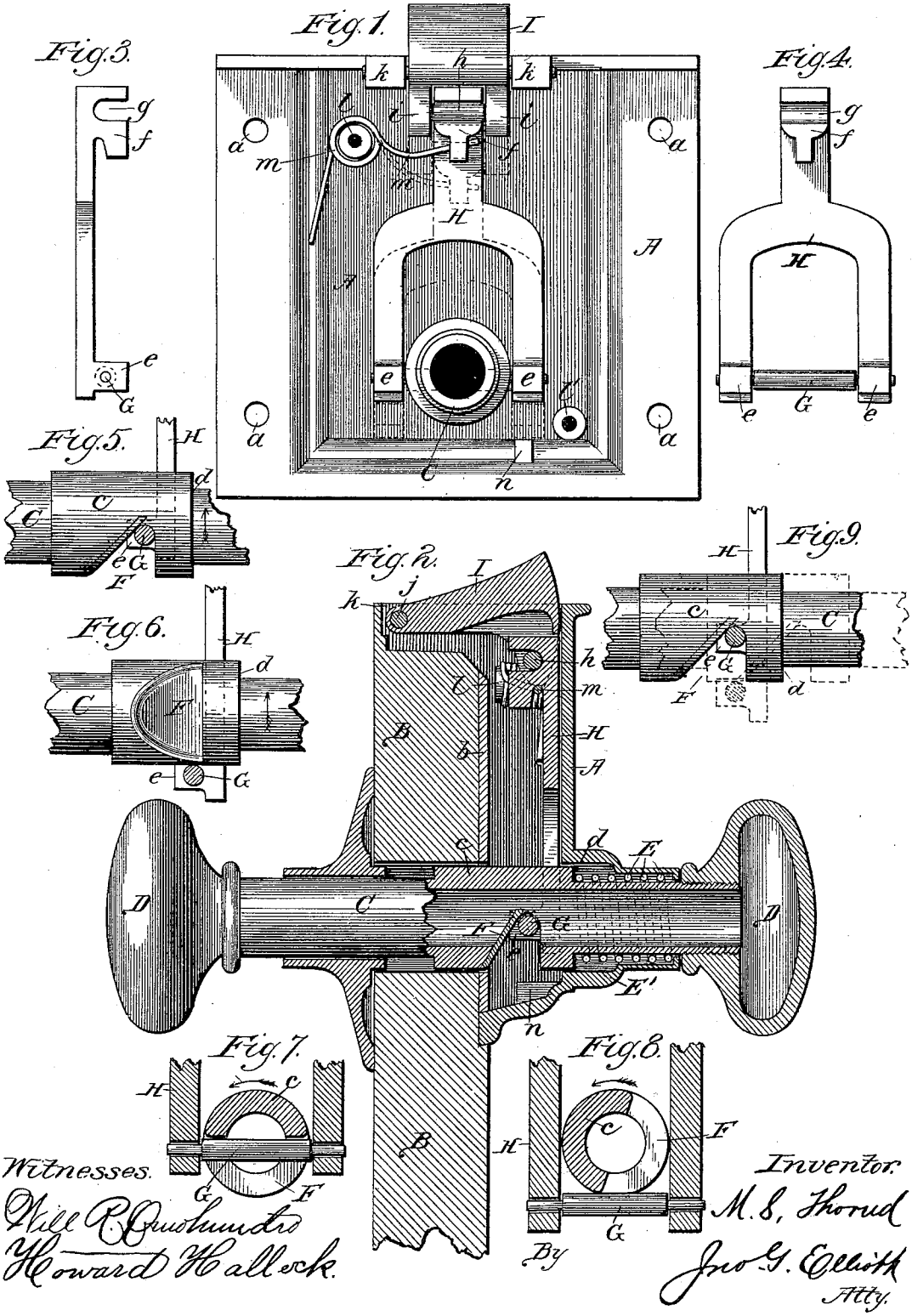
(No Model.)

M. S. THORUD.

LATCH.

No. 365,281. Patented June 21, 1887.



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UNITED STATES PATENT OFFICE.

MARINIUS S. THORUD, OF CHICAGO, ILLINOIS.

LATCH.

SPECIFICATION forming part of Letters Patent No. 365,281, dated June 21, 1887.

Application filed April 24, 1885. Serial No. 163,290. (No model.)

To all whom it may concern:

Be it known that I, MARINIUS S. THORUD, a subject of the King of Norway, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Latches, of which the following is a specification.

This invention relates to improvements in latches, and more particularly that class in which the latch is actuated by the rotary movement of a knob through the medium of a spindle.

The prime object of this invention is to have such a latch optionally operated by either a rotary or a reciprocating movement, or both, of the spindle or its equivalent in this class of latches.

A further object is to automatically maintain the spindle in such position against reciprocation that the latch will normally project forward out of the case in its locking position, and finally to simplify the construction and reduce the number of parts in such a latch, all as hereinafter described, and shown in the accompanying drawings, in which—

Figure 1 represents a rear face view of my latch with the covering plate removed and said latch detached from the door; Fig. 2, a horizontal central section thereof when applied to a door; Figs. 3 and 4, respectively, edge and plan views of the slide or yoke for operating the latch; Fig. 5, a detail view of a portion of the spindle to which the knobs are attached, showing the position of the slide-roller when the latch is projecting from the case and in operation; Fig. 6, a similar view showing the latch withdrawn from engagement with the jamb or catch by rotation of the spindle. Figs. 7 and 8 are, respectively, transverse vertical sections of Figs. 5 and 6; Fig. 9, a detail view of a portion of the spindle, the dotted lines representing the movement of the parts in withdrawing the latch from engagement with the catch when the spindle is reciprocated by pushing or pulling.

Similar letters of reference indicate the same parts in the several figures of the drawings.

A indicates the casing, which may be cast in one piece and secured to the door B by means of screws passing through holes *a a*, or in any other suitable and convenient manner. This casing has the usual projections to form suitable bearings for the latch and spindle, and has a covering-plate, *b*, to protect the parts from dirt and dust and to prevent their accidental loss or displacement. Passing loosely through this casing near its rear end is a hollow spindle, C, having rigidly secured to either end the knobs D for operating it.

Within the casing this spindle is enlarged, as shown at *c*, Fig. 2, to form shoulders *d*, against which the spring E abuts. In this enlarged portion of the spindle is formed a notch, F, having one side vertical and the other inclined at any desired angle. The inclined side of the notch, which is the working side, is preferably faced with a steel plate rigidly secured in place by any well-known means, upon which face rides the slide-roller G. This slide-roller G is seated in the notch F, as aforesaid, and is loosely journaled in projections *e*, formed on the arms of the bifurcated slide or yoke H, the ends of which are on either side of and straddle the spindle, as clearly illustrated in Fig. 1. The forward end of the slide H has an upwardly-projecting lug, *f*, in which is formed an elongated slot or crotch, *g*, for reception of the anti-friction roller *h*, loosely journaled between the two rearwardly-projecting arms or lugs *i i* of the latch I, which latch toward one end and by a pivot, *j*, is secured between two projections, *k k*, on the casing.

For the purpose of securing the covering-plate *b* in position, two lugs, *l l'*, are formed on the casing, having holes for the reception of retaining-screws passed through the plate into the lug. The lug *l* also constitutes a spindle upon which to screw the spiral spring *m*, one end of which spring bears against the casing A and the other end against the lug *f* on the slide H in such a manner that it will force the slide forward and cause the latch to normally project from the casing.

With the construction of latch described, it will be observed by reference to Fig. 7 that when it is desired to unlatch the door by rotating the knob, as is ordinarily done in latches of this class, any rotation whatever of the spindle in either direction will cause the solid portion of the spindle to come in contact with the slide-roller and cause the slide to recede carrying with it the latch, until the spindle attains approximately the position shown in

Fig. 8, when the rear end of the slide H will come in contact with the lug or stop *n*, formed on the casing H, and prevent a further inward movement of the latch. The relative location of this lug *n* to the slide will of course govern the amount of movement of the slide and throw of the latch; but in any event the movement must be sufficient to permit the entire withdrawal of the latch from engagement with the opposing catch, and it is not deemed advisable to permit a sufficient rotation of the spindle to allow the slide-roller to reach the periphery of the spindle, for by so doing the tension of the latch-spring would be overcome and the latch remain within the casing until the spindle is rotated sufficiently to allow the said roller to enter the notch.

By limiting the rotation of the spindle, through the medium of the lug, to an extent which will not permit the roller to ride entirely out of the notch, the spring is enabled to exert a force sufficient to throw the latch-bolt forward the moment the knob is released.

To operate the latch by a reciprocating to the exclusion of a rotary movement of the spindle, said spindle, with the knob-shanks forming a continuation thereof, is somewhat longer than the distance between the extremities of its bearings, as shown in Fig. 2, and is normally held at one extremity of its stroke to project the latch-bolt forward by the spring E, before referred to, and impinging between the shoulders *d* of the spindle and extension E′, formed with or rigidly secured to the casing A. The extension E′ corresponds to the ordinary detachable rose of a mortise-latch, both in function and arrangement, and the knob next the extension is normally held against the end of the extension by the action of the spring.

From this construction and arrangement it will be seen that a sufficient pull on one knob, or a push of the other, to reciprocate the spindle will cause the slide-roller G to mount the inclined side of the notch F, as illustrated by dotted lines in Fig. 9, and hence withdraw the latch from engagement with the opposing catch, as before explained.

It is designed to place this latch upon a door in such a manner that the knob upon which a pull is necessary to operate the slide shall be upon the side of the door in the direction in which it opens, and the knob requiring a push on the opposite side or the side requiring a push to open the door.

For the spindle it is proposed to use ordinary gas-pipe as being the most economical, durable, and suitable material; but it could be cast solid if desired with the notch formed in it and without the employment of a face-plate in the notch, such as has been described. The cap or covering-case A may be in the form of a rose, making both sides of the latch exactly alike in external appearance; but such minor changes will not be construed as a departure from the spirit of my invention.

If desired, I may use a notch having two inclined sides, in order that the latch may be operated by a push or pull on either knob without exceeding the scope of my invention.

In conclusion I may add that although the invention has been shown and described in its application to a surface-latch, it may as well be applied to a mortise-latch without any material or substantial change in the form or arrangement of the parts embodying my invention.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The latch-bolt and the spindle provided with a notch having an inclined wall, in combination with a slidable roller and means for connecting said roller with the latch-bolt and spindle, said slidable roller being actuated by the inclined wall of the notch, substantially as described.

2. The pivoted latch-bolt, the roller, and the yoke, in combination with a rotatable spindle provided with a notch having an inclined wall, the wall of said notch constituting a bearing for the roller, substantially as described.

3. The latch-bolt, a pivot at one extremity thereof, the yoke, a separate pivot-connection between said yoke and latch-bolt, and a spring engaging and actuating the yoke, in combination with a spindle provided with a notch, the walls of which constitute a sliding connection between said spindle and yoke, substantially as described.

4. The latch-bolt, the yoke, and the anti-friction roller on said yoke, in combination with a rotating spindle projecting through said yoke and provided with a notch having an inclined wall engaging said anti-friction roller, substantially as described.

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