





# UNITED STATES PATENT OFFICE.

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## LATCH.

SPECIFICATION forming part of Letters Patent No. 618,708, dated January 31, 1899.

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*To all whom it may concern:*

Be it known that I, BURTON P. MERWIN, a citizen of the United States, residing at Aspetuck, county of Fairfield, State of Connecticut, have invented a new and useful Latch, of which the following is a specification.

My invention has for its object to so simplify and improve the construction of the operating mechanism of door-latches that without adding appreciably to the cost of production the construction shall be such that when a door is in the closed position and the latch-bolt is thrown the bolt may be retracted from either side, so that the door will open by either pulling upon the knob and moving the spindle outward, or by pushing upon the knob and moving the spindle inward, or by rotating the spindle by means of either knob, and which, furthermore, will enable the user to lock the latch at the retracted position, so that the door will open without touching either knob by means of the spindle, a simple movement only being required to effect this result. This construction, it will be noted, enables a person who may approach a door from either side and be carrying something which it is not convenient to put down and pick up to unlatch the door and open it by the simplest possible movement.

With these ends in view I have devised the simple and novel construction which I will now describe, referring by reference characters to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a horizontal section of a door and a latch-case thereon, illustrating my novel latch-operating mechanism, the latter being partly in section; Fig. 2, a section on the line  $x x$  in Fig. 1 looking toward the left; Fig. 3, a section on the line  $y y$  in Fig. 1 looking toward the right; Fig. 4, a section on the line  $z z$  in Fig. 1 looking toward the right; Fig. 5, a view similar to 4, showing a position of the parts when the latch-bolt has been retracted and the spindle so manipulated as to retain it in the retracted position; and Fig. 6 is a detail view similar to Fig. 2, showing the manner in which the yoke, and with it of course the latch-bolt, is retracted by rotation of the spindle.

A denotes a door, and B a latch-case thereon,

which may be of any ordinary or preferred construction.

I have shown my invention as applied to an ordinary rim-latch; but it may of course be applied to a mortise-latch without other than slight changes in the details of construction not involving the slightest exercise of inventive genius.

C denotes the latch-bolt, S the spindle, and T a V-shaped notch in the spindle, which is adapted to be engaged by the ordinary yoke for retracting the latch-bolt. The general construction and arrangement of the latch-operating mechanism are not of the essence of my invention, the essential features of my present construction being that the spindle be adapted to have longitudinal as well as oscillatory movement, that the spindle be provided with a V-shaped notch, and that the yoke be provided with a bearing-surface adapted to engage the base of the notch when the latch-bolt is in the normal or thrown position, or to ride up either side thereof when the spindle is moved in or out for the purpose of retracting the latch-bolt without rotary movement of the spindle, or to engage either end of the notch when the spindle is rotated to retract the latch-bolt without longitudinal movement of the spindle. The latch-bolt C is provided with the usual shank D, the inner end of which passes through and is supported by a wall or boss E in the case and engages a yoke F. This yoke may be of any ordinary or preferred construction, it being simply necessary that it be provided with a bearing-surface R, which is adapted to engage the base T' of notch T when the latch-bolt is in the thrown position, to engage either side T<sup>2</sup> thereof in the act of retracting the latch-bolt by longitudinal movement of the spindle, and to engage either end T<sup>3</sup> thereof in the act of retracting the latch-bolt by oscillatory movement of the spindle. A spring G, bearing against the bolt and against a washer H resting against the wall or boss E, acts to retain the latch-bolt at the thrown position.

J denotes the knobs, and K the knob-shanks, which may be of any ordinary or preferred construction.

L denotes a rose upon the outer side of



the door, and M a hub which projects from the latch-case. In the present instance I have shown rose L as adapted to be engaged by the outer knob-shank to limit the inward movement of the spindle from the outer side and have shown hub M as adapted to be engaged by the inner knob-shank to limit the inward movement of the spindle from the inner side. The object in limiting the longitudinal movement of the spindle in both directions is to insure that after the latch-bolt has been retracted it will be impossible to continue the longitudinal movement of the spindle and lock the latch-bolt in the retracted position through the engagement of the bearing-surface of the yoke with the surface of the spindle, but the instant the operator moves his hand from the knob the spring will return the latch-bolt to the thrown position. It is simply necessary that stops be provided for this purpose; but it is of course not necessary that the knob-shanks serve as these stops or that the stops engage a rose and hub, as in the present instance.

N denotes a boss or pin on the spindle, which is adapted to engage stops O, lying diametrically opposite to each other on the inner side of the hub to limit the oscillation of the spindle in both directions, so that after retracting the latch-bolt it will be impossible to continue the oscillation of the spindle and lock the latch-bolt at the retracted position through the engagement of the bearing-surface of the yoke with the surface of the spindle; but the instant the operator removes his hand from the knob the spring will return the latch-bolt to the thrown position. These stops may be raised above the inner surface of the hub, as shown in the drawings, or, if preferred, the inner side of the hub may fit the spindle more closely and a suitably-shaped groove be provided for the boss or pin to travel in. It is simply essential that stops O extend from the outer end of the hub inward far enough so that the pin or boss cannot pass either stop until the spindle has been moved inward from the inner side to the limit of its movement. When, however, the spindle has been moved inward—i. e., toward the right, as seen in Fig. 1—to the extreme position shown in dotted lines, thereby retracting the latch-bolt, then the boss or pin will pass the end of either stop O and will permit the spindle to be oscillated. This oscillation will throw the notch in the spindle out of alinement with bearing-surface R of the yoke, so that said bearing-surface will continue to rest on the high portion of the surface of the spindle—that is, any portion of the spindle except the base or sides of notch E—and thus retain the latch-bolt in the retracted position.

P denotes a stop on the inner side of hub M, which lies midway between stops O and in position to be engaged by the boss or pin on the spindle after the latter has been moved

to the extreme of its position toward the right, as seen in Fig. 1, and has passed either of the stops O. The purpose of this stop is to limit the oscillation of the spindle in either direction, so as to prevent the notch in the spindle from passing into alinement with the bearing-surface of the yoke. The bearing-surface of the yoke is thus retained in engagement with the high portion of the spindle and the latch-bolt is retained in its retracted position, so that neither oscillatory nor longitudinal movement of the spindle will cause the latch-bolt to return to the thrown position. When the parts are in this position, the latch-bolt being locked in the retracted position, in order to release the latch-bolt it is necessary first to move the spindle longitudinally to its extreme position toward the right, as seen in Fig. 1, then while held inward oscillate the spindle, so that the pin or boss will move away from stop P and will pass one of the stops O, thereby bringing the notch in the spindle into alinement with the bearing-surface of the yoke again, and then move the spindle again toward the left, as seen in Fig. 1. This will permit the bearing-surface of the yoke to pass into the notch and the spring will instantly move the bolt to the thrown position, the bearing-surface riding down one of the inclined sides of the notch until it rests at the base of the notch, as clearly shown in Fig. 1.

U denotes a recess in hub M which receives boss or pin N in the act of assembling.

Having thus described my invention, I claim—

1. In a latch mechanism, the combination with a latch-bolt and a yoke having a bearing-surface, of a longitudinally-movable and rotatable spindle having a V-shaped notch which is engaged by the bearing-surface and the sides and ends of which act to retract the latch-bolt when the spindle is moved and which retains the latch-bolt at the retracted position when the bearing-surface is out of the notch and means for limiting the oscillation of the spindle when the bearing-surface is out of the notch to prevent the notch from being moved into alinement with the bearing-surface.

2. The combination with a latch-bolt and a yoke having a bearing-surface, of a longitudinally-movable and rotatable spindle having a V-shaped notch and a boss and a hub having stops O and P adapted to be engaged by the boss, substantially as described, for the purpose specified.

3. The combination with a latch-bolt and a yoke having a bearing-surface, of a longitudinally-movable and rotatable spindle having a V-shaped notch and a boss N and a hub having stops O adapted to be engaged by the boss to limit the oscillation of the spindle in retracting the latch-bolt.

4. The combination with a latch-bolt and a yoke having a bearing-surface, of a longitu-

5 dinally-movable and rotatable spindle having a V-shaped notch and a boss N and a hub having a stop P which is adapted to be engaged by the boss when the notch is out of alignment with the bearing-surface of the yoke to limit the oscillation of the spindle and retain the latch-bolt at the retracted position.

In testimony whereof I affix my signature in presence of two witnesses.

BURTON P. MERWIN.

Witnesses:

A. M. WOOSTER,

G. M. WITHERELL.