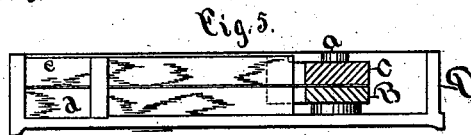
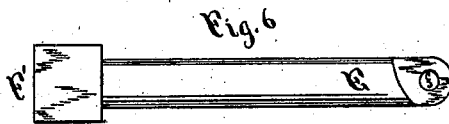
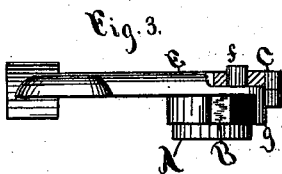
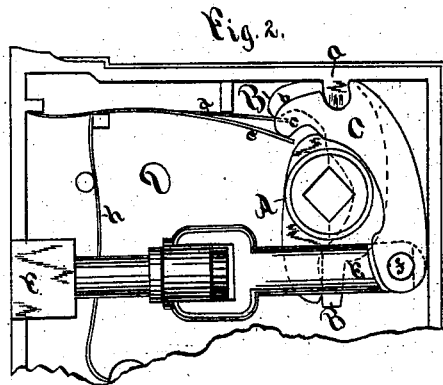
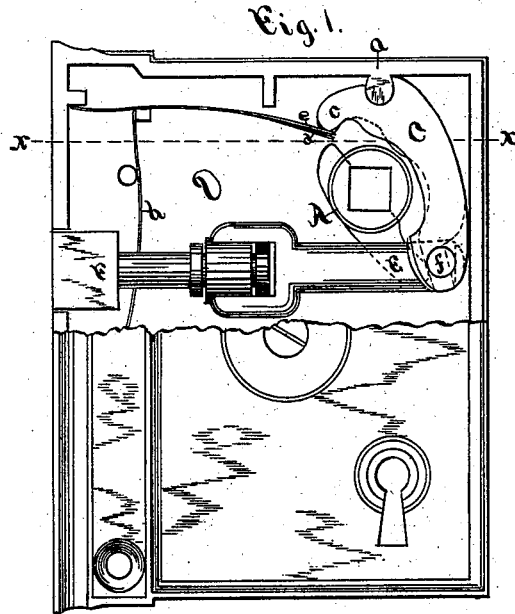


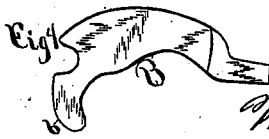
W. E. SPARKS.
Reversible Latch.

No. 209,990.

Patented Nov. 19, 1878.



Witnesses.
W. B. Thomson.
P. J. Mansley.



Inventor.
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By James Shepard, Atty.

UNITED STATES PATENT OFFICE.

WILLIAM E. SPARKS, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO
P. & F. CORBIN, OF SAME PLACE.

IMPROVEMENT IN REVERSIBLE LATCHES.

Specification forming part of Letters Patent No. 209,990, dated November 19, 1878; application filed October 12, 1878.

To all whom it may concern:

Be it known that I, WILLIAM E. SPARKS, of New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Latches, of which the following is a specification:

My invention consists in the combination of a latch-bolt, two levers, and slotted hub with two springs, acting to return the parts to their respective places, both of which springs and levers are acted upon when the latch-bolt is drawn inward by means of the knob-spindle, and only one set of which springs and levers is acted upon when the latch-bolt is forced inward through the medium of the striker-plate, as hereinafter described; also, in a reversible latch, the bar of the latch-bolt having the lug shown, in combination with slotted hub, spring, and lever operated by the hub, said lever acting upon the bar through the lug, as hereinafter more fully described; also, in a general combination of parts, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a front elevation of a latch which embodies my invention, the front plate being detached, and the latch represented with the latch-bolt drawn inward under the influence of the knob-spindle. Fig. 2 is a like view of the same, represented with the latch-bolt forced inward under the influence of the striker-plate. Figs. 3 and 4 are detached views of parts thereof. Fig. 5 is a horizontal section of said latch on line *x x* of Figs. 1, as viewed from the under side; and Fig. 6 is a detached view of a modified form of latch-bolt, which adapts the invention to a non-reversible latch.

My invention relates to that well-known class of latches in which the bolt is operated by a hub, having one short arm and one long arm, acting upon a lever at one side of the hub.

A designates the hub, slotted about half-way through on its back edge, as indicated by broken lines in Fig. 1, the slot being of a width that will admit the two levers B C, both of which are hung to the stud *a* of the latch-case D, so as to oscillate thereon. The levers B C have a short arm, *b* and *c*, respectively, acting upon two separate springs, *d e*, arranged edge to edge in the case D. (See Fig. 5.)

When the latch-bolt is thrown outward and the parts at rest both arms of the hub A rest against the edge of the under lever, B. The swinging end of the lever C is hung to the end of the bar E by means of the stud or pin *f* on said bar resting in a hole in said lever, as shown. The bar E has the ordinary latch-bolt F swiveled thereto, and has also at its rear end a depending lug, *g*. (See Fig. 3, which represents the bar E, the two levers, and hub, all detached from the case, and as viewed from the under side when the parts are at rest.) The lug *g* is a short distance to the right of the end of the under or rear lever, B. This is essential in a reversible latch, in order to allow the bolt to be drawn forward for reversal. The spring *h* is merely to draw the bolt into the case after being pulled out to reverse, substantially as in prior locks.

I prefer to make the spring *d*, which acts against the arm *b* of the under or rear lever B, more powerful than the spring *e*.

The operation is as follows, viz: When the knob-spindle is turned to throw either arm of the hub A against the edge of lever B the spring *d* resists such action, so that the inoperative movement of the hub, which is necessary in this class of reversible latches, is not felt by the person who is operating the knob-spindle. After moving a short distance the end of the lever B engages with the lug *g*, thereby carrying the bar E, latch-bolt F, and lever C, hung to said bar with the lever B, the lever C acting against the spring *e* to depress it. The spring *d* starts first, and (if the springs were even with each other when at rest) it will be thrown into a position slightly in advance of the spring *e*; but so soon as the lost motion of the lever B is taken up, then both springs move together, but in the relative positions caused by said lost motion. The position of the parts, with the bolt drawn inward through the medium of the knob-spindle and hub, is shown in Fig. 1, in which position all of the power of both springs is brought to bear in returning the parts to their former position.

When the door is swung to, so that the bolt is forced inwardly by engagement with the ordinary striker-plate, the hub A, lever B, and

its spring *d*, which is the strongest one, all remain at rest, while the lever C, to which the bar E is hung, the spring *e*, and said bar are the only parts which are acted upon through the striker-plate. (See Fig. 2.) It is therefore necessary to make the spring *e* only of the requisite strength to return the lever C and bar E to their former positions, whereby only a slight resistance is offered to the forcing in of the latch-bolt under the influence of the striker, so that it will work smoothly and easily, and with much less friction than when the latch-bolt in moving inward necessarily compresses the spring, which returns all the parts which are operated by the knob-spindle.

I have described the invention as applicable to reversible latches; but it is evident that a solid latch-bolt, F', as shown in Fig. 6, instead of the swiveled and reversible one, might be employed, and all the advantages herein described of the two springs, levers, &c., attained thereby.

I am aware that slotted hubs, levers, and slides of various forms are all old in reversible latches, examples of which may be seen in my prior Patents No. 198,704, December 25, 1877, and 201,958, April 2, 1878, all of which are hereby disclaimed.

I do not claim, broadly, a latch having two springs, only one of which is compressed when the latch-bolt is forced inward by means of the striker; but

I claim as my invention—

1. The latch bolt and bar, two levers, B C, and the slotted hub, in combination with two springs, *d e*, acting to return the parts to their respective positions, both of which springs and levers are acted upon when the latch-bolt is drawn inward by means of the knob-spindle, and only one of which levers and springs is acted upon when the latch-bolt is forced inward through the medium of the striker-plate, substantially as described, and for the purpose specified.

2. In a reversible latch, the bar E of the latch-bolt having the lug *g*, in combination with the slotted hub A, spring *d*, and lever B, operated by the hub, said lever acting upon the bar through the lug *g*, the latter being set so that when the parts are at rest it is away from and at one side of the lever, so that said lever may move a given distance without moving the bar, substantially as described, and for the purpose specified.

3. In a latch, the combination of the hub A, levers B C, springs *d e*, and bar E, having lug *g*, and hung to the end of the lever C, all operating together, substantially as described, and for the purpose specified.

WILLIAM E. SPARKS.

Witnesses:

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