(No Model.)

W. E. SPARKS.

REVERSIBLE LATCH.

No. 312,917. Patented Feb. 24, 1885.

Fig. 1.

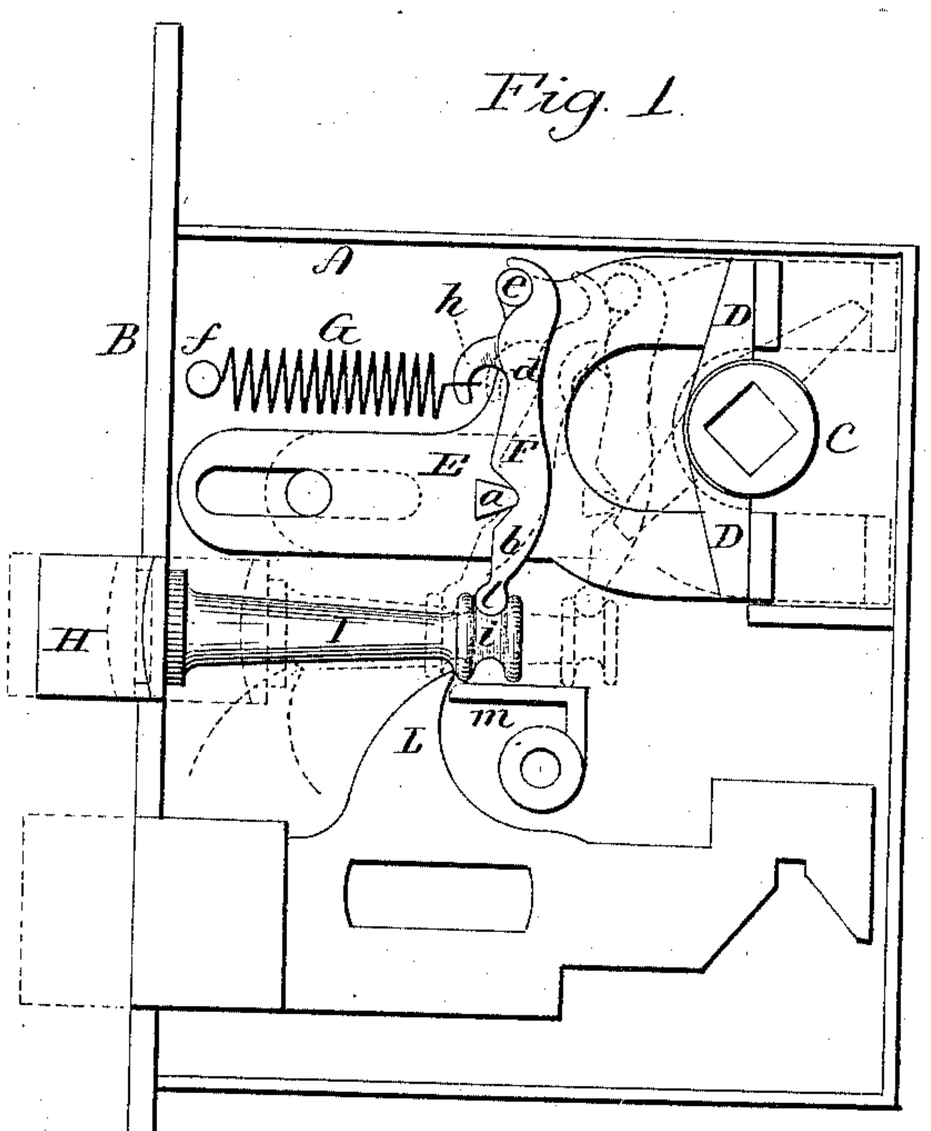
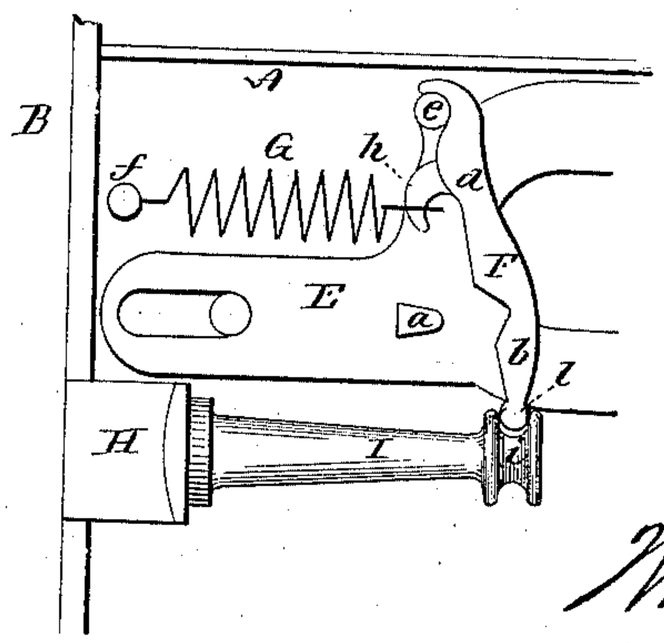


Fig. 2



Witnesses.
L. N. Shumway.
Lo. C. Earle

William E. Sparks
Inventor
By atty
Wm. E. Earle.

UNITED STATES PATENT OFFICE.

WILLIAM E. SPARKS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO SARGENT & CO., OF SAME PLACE.

REVERSIBLE LATCH.

SPECIFICATION forming part of Letters Patent No. 312,917, dated February 24, 1885.

Application filed December 15, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. SPARKS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Knob-Latches; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view, the face-plate removed to show the mechanism of the latch, the parts in their normal condition; Fig. 2, the same view of the latch portion, showing the latch as forced inward independent of the connection of the knobs.

This invention relates to an improvement in that class of knob-latches in which the bolt is made reversible by constructing the mechanism of the latch so that the head of the bolt may be drawn from the face-plate, then turned to either the right or left hand position, to adapt it to a corresponding door, and is an improvement upon an invention of mine for which Letters Patent of the United States were granted to Sargent & Co., my assignees, No. 306,545. In that invention, in order to adapt the bolt to what is termed an "easy" spring—that is to say, a spring upon the bolt which will yield under a slight force applied to the bolt, as in the act of closing the door—an auxiliary spring is arranged to act directly upon the bolt independent of the mainspring, the mainspring acting against the knob, and whereby, while a considerable power must be applied to the knob to draw in the bolt, a very much less power is required to force the bolt inward as it comes in contact with its keeper in the act of closing the door.

The object of my present invention is to employ but a single spring, and yet adapt the mechanism to the reversing of the bolt without the removal of the covering-plate of the case; and it consists in a lever hung upon a fulcrum on the slide, one arm extending downward and swiveled to the bolt, the other arm extending upward and resting against a bearing or second fulcrum on the slide, combined with a spring arranged to act upon the lever between the fulcrum and bearing on the slide, as more fully hereinafter described.

A represents the case; B, the face-plate; C, the hub of the follower; D D, its two arms; E, the slide upon which the follower acts in the turning of the knob, in the usual manner of knob-latches.

F is the lever, hung upon a fulcrum, *a*, on the slide. One arm, *b*, extends downward, the other arm, *d*, upward, and at its extreme upper end is arranged to rest against a stud, *e*, on the slide.

Between the fulcrum *a* and the stud or bearing *e* a helical or other suitable spring, G, is applied, one end attached to the case, as at *f*, forward of the lever, the other end engaged with the lever between the fulcrum and bearing, as at *h*, and so that as the slide is drawn inward by the turning of the knob, as indicated in broken lines, the lever F will move with it and extend the spring, and so that when the knob is released the spring will react and draw the lever and slide forward. In such movement the lever moves as a permanent part of the slide.

H is the latch-bolt, working through the face-plate B in the usual manner. Its tail I extends inward. Its extreme inner end is fitted with an annular groove, *i*, in which the lower end, *l*, of the arm *b* of the lever F stands. The tail end of the bolt rests upon a bearing, *m*, as a guide in its movement inward and outward, and so as to hold it in engagement with the end of the lever.

Standing in the normal condition, as seen in Fig. 1, the base of the head stands within the square opening in the case in the usual manner for latch-bolts. Now, if the bolt be drawn outward, as indicated in broken lines, it turns the lever F upon its fulcrum *a*, throwing the upper arm away from its bearing upon the stud *e*, and so as to take the head of the bolt from its seat in the face-plate. In this condition the bolt may be turned to either the right or left hand position, the annular groove in the tail of the bolt permitting such rotation while still engaged with the lever, the annular groove forming substantially a swivel between the bolt and its lever. As the door closes and the latch comes in contact with its keeper, it is forced

inward. In so doing the lever F turns upon the stud *e* as a fulcrum, as indicated in Fig. 2, and because the spring G is applied between the connection of the lever with the bolt and the fulcrum on which the lever turns, the power of the spring upon the bolt is reduced accordingly as the connection between the spring and lever is nearer the stud or second fulcrum, *e*, and arranged as shown in the drawings it is so much nearer that fulcrum *e* that very little force is required to throw in the latch-bolt; yet because the lever takes a firm bearing upon its two fulcrums on the slide the full power of the spring is applied to the slide to resist the drawing in by the knobs.

As represented in the drawings, the lock-bolt is constructed with a projection, L, which extends up forward of a shoulder on the latch-bolt, so that when the lock-bolt is drawn the latch-bolt is prevented from being reversed; but when the lock-bolt is thrown then the latch-bolt is free, as in my previous patent. By this construction I am enabled to employ the principles of the invention in my previous patent with a single spring, acting both as a strong spring for the knob and an easy spring for the bolt, and reverse the bolt without removing the plate of the case.

I claim—

In a knob-latch, the combination of the two-armed hub C, the slide E, adapted to engage with the arm of said hub, and constructed with the fulcrum *a*, and a second fulcrum or bearing, *e*, above said fulcrum *a*, the lever F, hung upon said fulcrum *a*, one arm extending upward, and so as to take a bearing upon the fulcrum *e*, the other arm extending downward below the fulcrum, a spring applied to said lever between its fulcra and the latch-bolt swiveled to the lower arm of said lever, substantially as described.

WILLIAM E. SPARKS.

Witnesses:
CHAS. L. BALDWIN,
G. L. SARGENT.