(No Model.)

W. E. SPARKS.

KNOB LATCH.

No. 327,833. Patented Oct. 6, 1885.

Fig. 1.

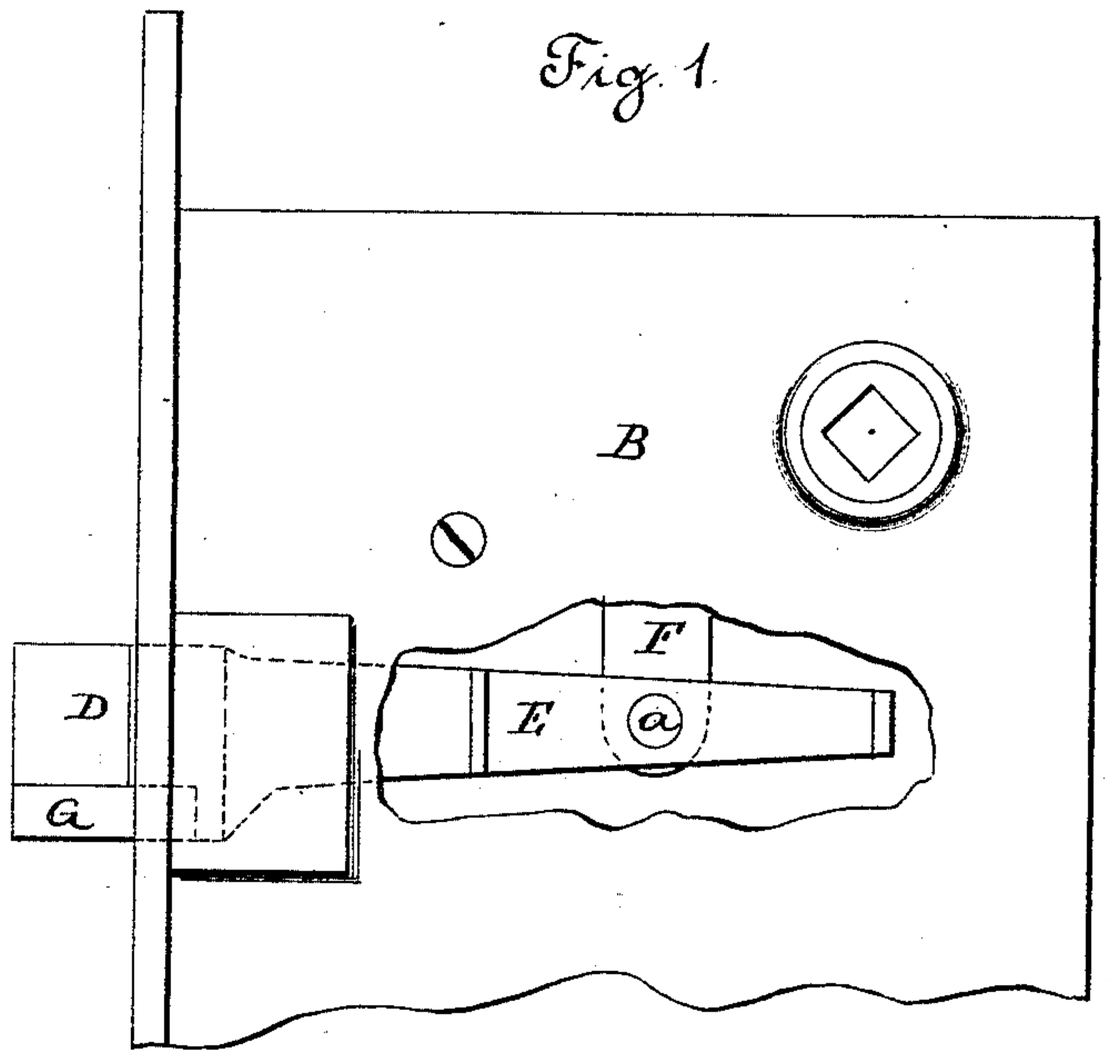


Fig. 5

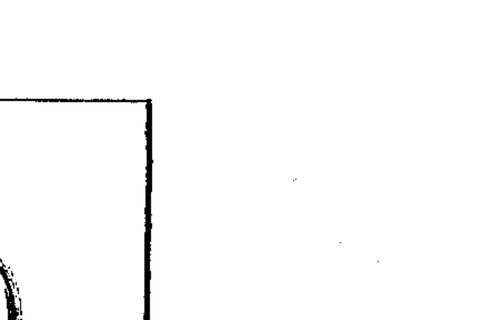


Fig. 2

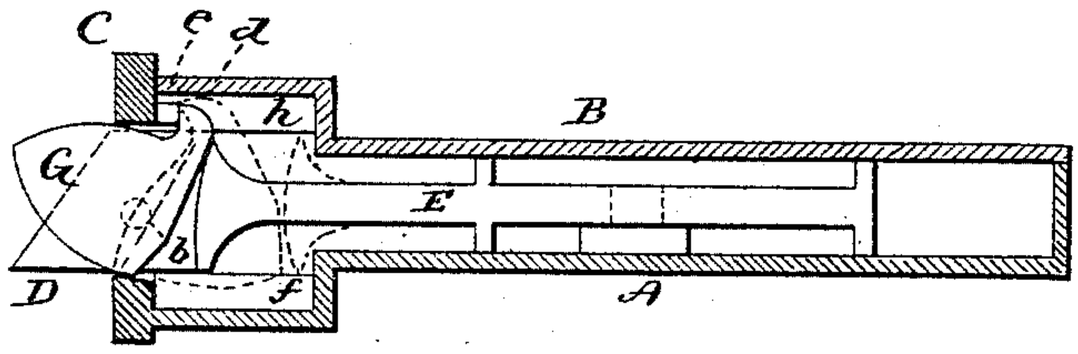


Fig. 3

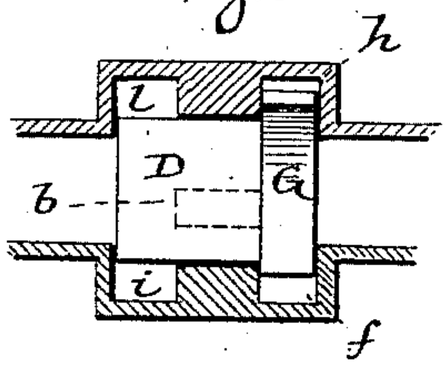
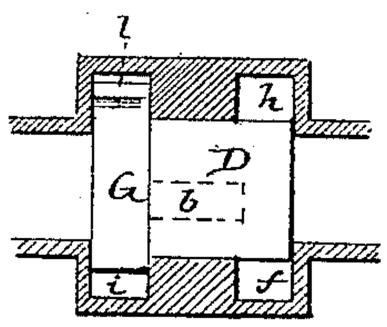


Fig. 4



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UNITED STATES PATENT OFFICE.

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

KNOB-LATCH.

SPECIFICATION forming part of Letters Patent No. 327,833, dated October 6, 1885.

Application filed August 3, 1885. Serial No. 173,381. (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 new Improvements 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 of the case, a portion of the plate broken away to show the connection between the latch-bolt and slide; Fig. 2, a longitudinal section through the case, close up to the lever; Fig. 3, a transverse section through the case in rear of the face-plate, showing end view of the latch-bolt and lever as set for a left-hand door; Fig. 4, the same section with the bolt reversed; Fig. 5, a face view of the face-plate at the bolt.

This invention relates to an improvement in that class of knob-latches in which the latch-bolt is provided with a lever at its nose to first strike the keeper on the closing of the door, and serve to aid in forcing the latch inward, and such as commonly called "anti-friction" latches, and particularly to the latches of this class in which the lever is hung upon one side of the latch-bolt, and so that one arm takes a bearing inside the case as a fulcrum through which the power of the lever is applied to the bolt, and also in which the latch-bolt is made reversible, so as to be adapted to either a right or left hand door.

In this class of lever attachment the lever is usually constructed with a stud or trunnion, which enters a corresponding hole or recess in the side of the latch-bolt as the pivot upon which the lever may turn. In operation there is necessarily a very considerable strain on the stud or pivot, and the tendency of the strain is to twist the lever so as to cause it to bind, or not work with the freedom it should do.

The object of my invention is to support the lever against such twisting action; and it consists in the construction hereinafter described, and more particularly recited in the claim.

A represents one side of the case, and B the opposite side; C, the face-plate; D, the nose of the latch-bolt, from which a tail, E, extends inward, and is adapted to be set upon a stud, *a*, on the slide F, or otherwise connected with the slide so that the latch-bolt may be removed and reversed.

On one side of the latch-bolt, at its nose end, the anti-friction lever G is arranged, and is hung thereon by a stud, *b*, entering a corresponding hole in the side of the bolt and upon which it may turn in a plane parallel with the plane in which the latch-bolt itself moves. One arm, *d*, of the lever G extends inside the case, and takes a bearing upon the inside of the face-plate, as at *e*, as a fulcrum, through which the lever G may act. The outer arm of the lever projects beyond the beveled nose of the latch in the usual manner, and so that as the door is closed the lever strikes the keeper in advance of the latch, and turning upon the fulcrum *e* acts upon the bolt through the pivot *b* to throw the bolt inward without the nose of the bolt coming in contact with the keeper.

The lever projects beyond the back of the latch-bolt, so that as the bolt is drawn in, as indicated in broken lines, Fig. 2, the end of the lever opposite the fulcrum extends to a considerable extent beyond the back of the bolt, and the arm *d* also extends to a considerable extent beyond the forward side of the bolt, as indicated in Fig. 3. To accommodate these projections on the bolt, I construct the case with a recess, *f*, upon one side and *h* upon the opposite side, in width equal to the thickness of the lever, and, as seen in Fig. 3, so that the lever in its movement works in the said recesses, taking a bearing therein at its two extremes, and thereby relieving the pivot from the twisting strain which would naturally come upon it in its operation. These grooves support the lever independent of the bolt, the connection between the bolt and the lever being simply a pivot by which the movement of the lever is imparted to the bolt.

To reverse the latch, the bolt is detached from the follower and inverted, as indicated in Fig. 4, which will bring the lever G upon the opposite side of the bolt, as seen in that figure. I therefore provide the case with recesses *i* and *l*, corresponding, respectively,

to and parallel with the recesses *f h*, in which the lever G will work, as indicated in Fig. 4, and, as before described, for the recesses *f h;* but in latches in which the bolt is not to be reversed, the pair of recesses not required may be omitted. The opening through the face-plate is of equal width throughout, as seen in Fig. 5, and in depth equal to the depth of the nose of the bolt plus the thickness of the lever, so that the opening in the face-plate is adapted to such reversal of the bolt.

By thus providing guides in the case for the anti-friction lever independent of the bolt, the strain and wear upon the pivot, and the twisting of the lever or of the bolt is avoided, and the latch is worked with much greater freedom than without such guides.

By "knob-latch" it will be understood that I include all latches having a bolt adapted to shoot into a keeper, and such as generally operated by knobs; but in some cases a lever is substituted for the knob, the movement and action of the latch, however, being the same in all cases.

The particular arrangement I have described for the lever on the latch-bolt is substantially that in Patent No. 205,041, granted to the assignees in this application. It will therefore be understood that I do not claim, broadly, the specific arrangement of the lever upon the latch-bolt described, it only being essential to my invention that the lever shall be hung to the latch-bolt, and that the case shall be constructed with recesses into which projecting portions of the lever may extend and work in the movement of the bolt, so as to relieve the bolt and lever from the twisting strain of one upon the other, which would otherwise occur.

I claim—

In a latch substantially such as described, a bolt, D, adapted to be drawn into the case through the face-plate, combined with a lever, G, hung to the bolt, the case constructed with grooves in the path of said lever, substantially as described, the said grooves serving as guides through which the lever moves.

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