C. H. SMITH.
Latch.

No. 203,787. Patented May 14, 1878.

Fig. 1.

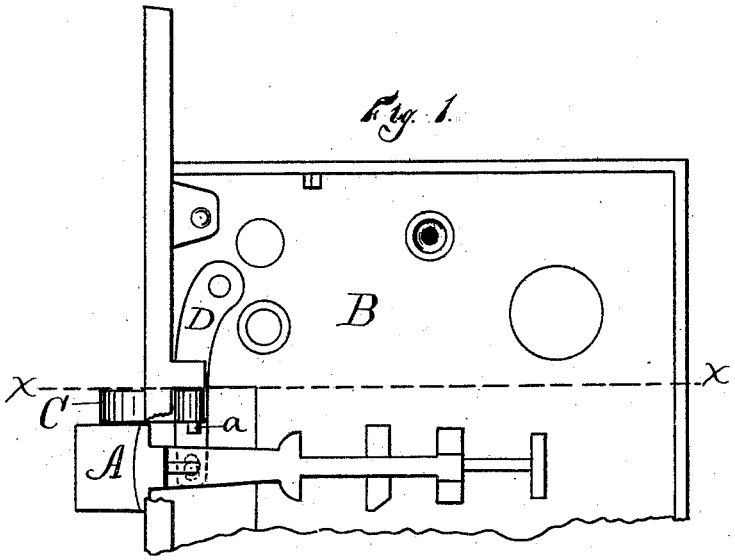


Fig. 2.

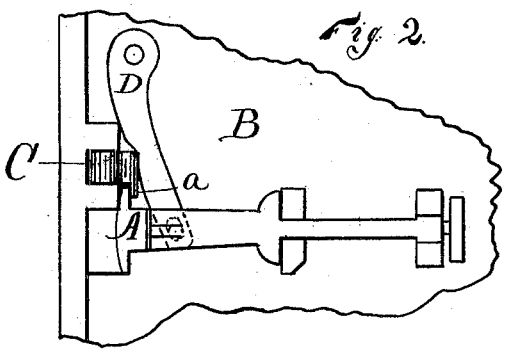
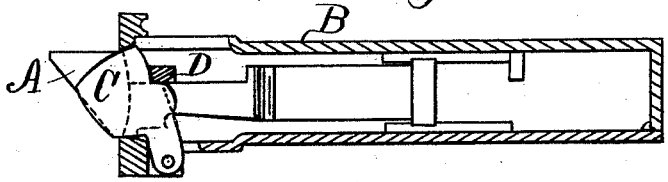


Fig. 3.



Witnesses.
H. N. Gale.
F. L. Hungerford.

Inventor.
Charles H. Smith
By James Shepard Atty.

UNITED STATES PATENT OFFICE.

CHARLES H. SMITH, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR TO P. AND F. CORBIN, OF SAME PLACE.

IMPROVEMENT IN LATCHES.

Specification forming part of Letters Patent No. **203,787**, dated May 14, 1878; application filed July 27, 1877.

To all whom it may concern:

Be it known that I, CHARLES H. SMITH, 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, with a latch-bolt and cam-lever which engages the striker, of an intermediate lever having one of its bearings on the latch-case and the other on the latch-bolt, as hereinafter described; also, in the combination of the cam-lever and bolt, provided with a bearing to be pushed by said cam-lever, and a lug or shoulder to come in contact with the cam to act as a stop for the bolt, said lug being located near the pivot of the cam and the bearing on the bolt being located near the end of said cam, as hereinafter described.

In the accompanying drawing, Figure 1 is a side elevation of a latch which embodies my invention, the same being represented with one of the lugs to which the cam-lever is hung broken off and the front plate removed, in order to better show the other parts. Fig. 2 is a like view of the same, represented with the cam-lever and latch-bolt depressed within the case; and Fig. 3 is a horizontal section of the same on line *x x* of Fig. 1.

It is deemed unnecessary to show the parts for drawing the latch-bolt into its case, as my invention relates only to the mechanism for forcing the same into the case through engagement with the ordinary striker, and of causing said mechanism to move inward upon the complete drawing in of the latch-bolt.

The latch-bolt A and its case B may be of any ordinary construction. At one side of the latch-bolt (in the drawings the upper side) there is an oscillating cam-lever, C, pivoted or pinned to suitable lugs on the face-plate of the case B, in a well-known manner, with its edge projecting so as to engage with the striker. When the latch-bolt and cam-lever are extended outward, as shown in Fig. 1, the said lever bears against the inside of the face-plate of the case B, (see Fig. 3,) and prevents said cam-lever from swinging farther outward. Upon the inside of said cam-lever there is a lug, *a*, which extends downward, so that when the latch-bolt is drawn inward nearly the whole extent of its inward movement one side of said lug engages a shoulder on the upper side of the latch-bolt, as shown in Fig. 2, and necessitates the inward movement of the cam-lever with the latch-bolt, so that whenever the latter is wholly withdrawn from its keeper, the former will also be withdrawn with it.

It should be noticed that the lug *a* has a single engaging surface or side only, and that it does not come to its bearing on the latch-bolt until the latter has been drawn inward nearly half the extent of its motion, and, when the same is forced inward by the striker, not until the latch-bolt has completed its inward movement, whereby there is not that liability to bind the parts that there would be in case the said lug continually engaged with the latch-bolt. This peculiar disengagement, except when wanted for use in drawing in the cam-lever through means of the bolt, is caused by placing the engaging-surface of the lug *a* at a point between the pivot-pin of the cam-lever and the point which engages with the latch-bolt to push it inward, so that the latter point of engagement moves faster than the lug *a*, and when the cam-lever and latch-bolt are both extended outward, as shown in Fig. 1, the lug *a* and the shoulder on the latch-bolt which engages it are about five-sixteenths of an inch apart, and they do not come in contact with each other when the cam-lever is depressed until said lever is forced wholly within the latch-case into the position represented in Fig. 1. The drawing-in device, therefore, not having any engagement at all when the cam-lever is operated by the striker, is absolutely frictionless, and yet it is always ready for use when wanted, and positively pulls the cam-lever into the case so soon as the latch-bolt is fully drawn inward, whereas, in all prior devices so far as I know, the engagement of the drawing-in device and latch-bolt is constant, and necessitates more or less friction and obstruction to the free and easy movement of the cam-lever when operated by the striker.

Just back of the cam-lever, and at about right angles to its line of motion, is an intermediate lever, one end of which is pivoted or pinned to the case B and the other end to the

latch-bolt A, the hole or bearing for one of the pins being elongated, so as to allow sufficient play to prevent the intermediate lever from binding as its lower end swings out and in with the longitudinal movement of the latch-bolt. I prefer to elongate the pin-bearing at the lower end of this lever, and any proper slotted connection of it with the latch-bolt will answer the purposes of my invention.

As soon as the striker engages the face of the cam-lever the latter is caused to oscillate on its fulcrum-pin and swing inward from the position shown in Fig. 1 into the position shown in Fig. 2. In thus swinging inward its inner edge engages with the intermediate lever and carries it inward, and also the latch-bolt to which said lever is connected, whereby a free and easy working connection is formed between the cam-lever and latch-bolt.

If desired, instead of the lug *a*, which insures the complete withdrawal from the striker of the cam-lever with the latch-bolt, the said lever might be connected by means of a suitable joint to the intermediate lever.

I claim as my invention—

1. In combination with a latch-bolt and cam-lever which engages the striker, an intermediate lever having one of its bearings on the latch-case and the other on the latch-bolt, substantially as described, and for the purpose specified.

2. In a latch, the combination of the cam-lever C and the bolt provided with a bearing to be pushed by the said lever, and a lug to come in contact with the cam to act as a stop for the bolt, said lug being located near the pivot of the cam, and the bearing on the bolt being located near the end of said cam, substantially as described, and for the purpose specified.

CHARLES H. SMITH.

Witnesses:

CHARLES PECK,

E. L. PRIOR.