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LOUIS HILLEBRAND, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 100,403, dated March 1, 1870.

IMPROVEMENT IN PADLOCKS.

The Schedule referred to in these Letters Patent and making part of the same

To all whom it may concern:

Be it known that I, LOUIS HILLEBRAND, of the city and county of Philadelphia, and State of Pennsylvania, have invented new and useful Improvements in Padlocks; and I do hereby declare the following to be a clear and exact description of the nature thereof, sufficient to enable others skilled in the art to which my invention appertains to fully understand and use the same, reference being had to the accompanying drawings making part of this specification, in which—

Figure 1 is a view of my improved padlock when closed, the covering-plate being removed to show the parts.

Figure 2 is a similar view when unlocked.

Figures 3, 4, 5, and 6 are detached views of different parts.

Like letters of reference indicate like parts in the several figures.

My invention consists in a cam formed on the bolt and arranged in relation to the fulcrum of the key. The inner face of a hooked-shaped bit of the key rides over the cam and draws the bolt, and thus opens the lock. The key can then be turned in either direction without disturbing the bolt or operating it until it is again locked.

In the drawings—

a represents the casing of my improved padlock, to which the shackle *b* is hinged at *c*.

The nose of this shackle is provided with a slot, *d*, into which the tongue *e* of the bolt seizes, a projection, *f*, on the bolt, forming, with the projection *g* on the casing, a place for the nose of the shackle when locked.

In fig. 4 is shown the bolt with its tongue *e* and projection *f*.

It is provided also with two slots, one slot, *h*, being oblong, in the center of the bolt, and having a cam, *i*, raising from the upper end of it, serves to allow the bolt-plate to play freely around the fulcrum *j* of the key, which is formed on the casing, and the other slot, *k*, also oblong and formed to the right of slot *i*, allows the bolt-plate to move freely around the pivot of the tumbler or tumblers *l*.

The bolt has also a shoulder, *m*, which acts against the arm *n*, attached to or formed on the heel of the shackle *b*.

On the rear of the tongue *e* of the bolt is formed a little projection, *o*, which, when the lock is open, seizes into a notch, *p*, in the tumbler *l*, the part of which latter, above this notch, bears against the projection *o* when the lock is closed, and prevents the bolt from moving backward to release the nose of the shackle.

The bolt and the tumbler are pivoted at opposite sides of the casing, the latter being kept in position, as shown in fig. 1, by means of a spring, *q*, attached, with one end to the tumbler, and bearing with the other against a shoulder in the top of the casing.

One arm, *r*, of a spring, pivoted at *s*, bears against the under side of the bolt, having a tendency to keep the latter in position, as shown in fig. 1, while the other arm, *t*, bearing against a pin on the heel of the shackle below its fulcrum, has a tendency to throw the shackle backward when released from the bolt.

The operation of my lock is as follows:

The key, which is shown in fig. 6, and has a hooked bit, *u*, which, on its inside or inner face, is slightly curved to correspond to the shape of cam *i*, is placed in its fulcrum and turned. The outer face pressing against the inner face of the tumbler, raises the same until the notch *p* comes in position to receive the projection *o* of the tongue of the bolt, when, the tumbler having been moved to the full extent possible, its inner face now becomes the bearing against which the outer face of the bit *u* operates, while, with its curved inner face riding over the cam *i*, it forces the bolt down and backward. Meanwhile the arm *n* on the heel of the shackle, which has been held by the shoulder *m* of the bolt, has, by the downward movement of the same, become free to pass over the shoulder, and the same movement of the bolt having also removed the tongue *e* from the notch *d* in the nose of the shackle, which latter, by the force of spring-arm *t* exerted against its heel, is thrown backward, thus opening the lock.

While the shackle is out of the lock or casing the arm *n*, still bearing against the bolt at the rear of its fulcrum, prevents the bolt from locking, until the arm, in the closing movement of the shackle, passes the end of shoulder *m*, which takes place only when the notch *d* in the nose of the shackle is in position to receive the tongue *e*.

In closing the lock, the bolt is actuated by spring arm *r*, and the tumbler moved to its normal position as soon as projection *o* has left slot *p* by means of the spring *q*.

The line *x x* is drawn through the center of the axis of the shackle and of the arm *n*.

The line *y y* is drawn through the center of the axis of the shackle and bolt.

When the shackle is withdrawn, its arm *n* does not pass the line *y y*. It thereby prevents the closing or locking of the bolt until the shackle is again fully introduced into the lock-casing.

When the bolt has been opened by the action of the inner face of the hooked-shape bit of the key,

the cam occupies such position that the key can be turned to the right or left without disturbing the bolt or tumblers.

Having thus described my invention,

What I claim as new therein, and desire to secure by Letters Patent, is—

The cam formed on the bolt, and operated by the inner face of the key-bit, and arranged relatively with the fulcrum of the key, so that when the lock is open

the key will ride freely over the cam without disturbing the bolt or tumbler, substantially as set forth.

The above signed by me this 4th day of February, 1870.

LOUIS HILLEBRAND.

Witnesses:

JOHN A. WIEDERSHEIM,
FRANCIS KUYSER.