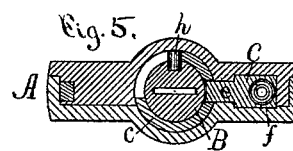
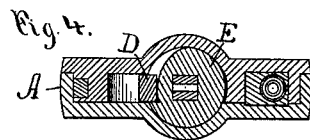
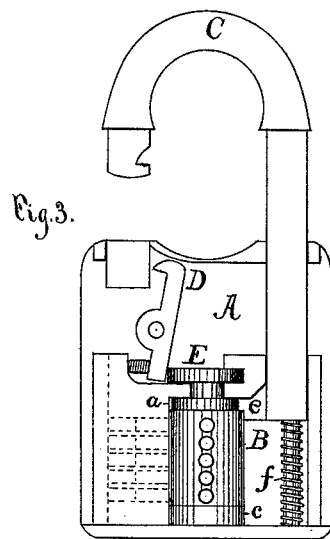
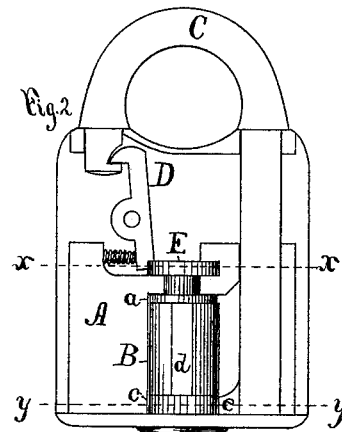
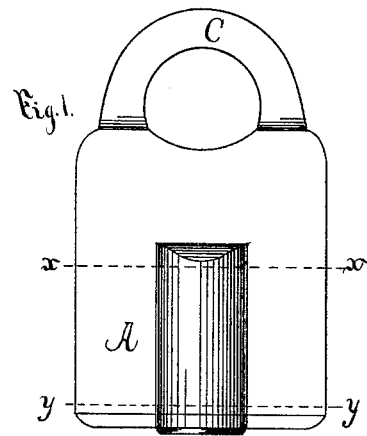


F. W. MIX.
Padlock.

No. 220,637.

Patented Oct. 14, 1879.



Witnesses:
W. B. Thomson.
Sydney S. Burr

Inventor:
Frank W. Mix.
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UNITED STATES PATENT OFFICE

FRANK W. MIX, OF TERRYVILLE, CONNECTICUT.

IMPROVEMENT IN PADLOCKS.

Specification forming part of Letters Patent No. **220,637**, dated October 14, 1879; application filed June 9, 1879.

To all whom it may concern:

Be it known that I, FRANK W. MIX, of Terryville, in the county of Litchfield and State of Connecticut, have invented certain new and useful Improvements in Padlocks, of which the following is a specification.

Many of the parts shown in this application are also found in another application of even date herewith; and so many features of invention as are common to both applications are intended to be claimed in the other application, thereby making this the subordinate case and the other the foundation one.

My invention, as herein described and claimed, relates more particularly to a sliding shackle locked at the heel, or both the heel and toe; and consists in the peculiar construction of the parts and in their combinations, as hereinafter described.

In the accompanying drawings, Figure 1 is a side elevation of a padlock which embodies my invention. Fig. 2 is a like view of the same, with the front plate removed and the shackle locked. Fig. 3 is a like view of the same, with the shackle unlocked. Fig. 4 is a transverse section of said lock on line *xx* of Figs. 1 and 2, and Fig. 5 is a transverse section on line *yy* of said figures.

The lock-case A is divided longitudinally into two parts, which, when together, are bored out to receive the key cylinder B of an ordinary pin-tumbler lock. I prefer to divide this case on one side of the middle, so that one side will contain a little more than half of said cylinder, as shown in Figs. 5 and 6. The position of the pin-tumblers is indicated by broken lines in Fig. 3, but not being new it is considered unnecessary to describe them.

The key-cylinder B, which also contains pin-tumblers, is provided with a flat steel scroll spring, *a*, one end of which is secured to the case and the other to said cylinder, so as to throw the cylinder, when released, into the proper position for the pin-tumblers to lock the cylinder against rotation. A wire spring, or other ordinary kind of spring, may be substituted for the spring *a*, if desired.

A short hub, *c*, of the same size as the cylinder B, extends into the case a short distance, as shown, which hub is slotted or recessed for the stop-pin *h* of cylinder B, the ends of the

slot acting as a stop to check the cylinder at the proper point for locking it.

One side of the cylinder B has a longitudinal groove, *d*, Fig. 2, so located as to be in front of and over the heel of the sliding shackle C when the lock is unlocked, and the heel of the shackle has an arm, *e*, which fits said groove. Said shackle is projected, when released, by means of spring *f*, Fig. 3.

The nose of the shackle is locked by a spring-actuated dog, D, which dog is forced out of engagement by a cam, E, on the upper end of cylinder B.

When the key-cylinder is locked by its pin-tumblers, the cam E allows the dog to take into the nose of the shackle under the influence of its spring, and the arm *e* on the heel of the sliding shackle enters a notch in the hub *c* below the slotted portion of the cylinder and under a solid portion thereof, whereby the shackle is locked at both heel and toe. A proper key inserted within the cylinder releases it when it is turned to the right, and the cam releases or withdraws the dog from the nose of the shackle, and the groove *d* in the cylinder comes directly over the arm *e*. The spring *f* then throws the shackle outward, the arm *e* passing upward through the groove *d* into the position shown in Fig. 3, thereby unlocking the lock, and also holding the cylinder from rotation. By depressing the shackle back into the case the arm *e* disengages from the cylinder, the spring *a* returns said cylinder and its cam to its former position, and the lock is again locked. In this construction the key cannot be removed when the lock is unlocked.

If desired, the cam E might be so coupled to the cylinder that the latter can be turned one-fourth of a revolution backward independently of the cam, when the key can be withdrawn without first relocking the lock. Such a connection of the cam with the key-cylinder is shown and described in the other application before referred to.

If the double cylinder is designed for use with the sliding shackle locking at the heel, the groove *d* would be formed in the upper part of the cylinder rigid with the cam, and the heel of the shackle correspondingly shortened.

If desired, a sliding dog may be substituted

for the spring-dog D, and be operated both ways by the cam E'.

I claim as my invention—

1. In a padlock, a rotating cylinder grooved as at *d*, in combination with the heel of a sliding shackle, substantially as described, and for the purpose specified.

2. In a padlock, the key-cylinder of a pin-tumbler lock, in combination with the sliding shackle and mechanisms acting with said cylinder to lock the shackle at both heel and toe, substantially as described, and for the purpose specified.

3. In a pin-tumbler lock, the combination of the key-cylinder, grooved longitudinally, the sliding shackle with heel adapted to work in said groove, and a spring for turning the cylinder to throw the grooved portion away from the heel so soon as it passes out of the same, substantially as described, and for the purpose specified.

4. In a pin-tumbler lock, the combination of the rotating cylinder having a longitudinal groove, the sliding shackle having a heel fitted to work in said groove, and the spring *f*, for forcing the heel of the shackle into the groove of the cylinder, substantially as described.

5. The combination of the key-cylinder of a pin-tumbler lock, having groove *d*, the sliding shackle having arm *e*, and the springs *a* and *f*, acting on said cylinder and shackle, respectively, substantially as described, and for the purpose specified.

6. The combination of the key-cylinder B, spring *a*, cam E, dog D, sliding shackle C, and spring *f*, substantially as described, and for the purpose specified.

FRANK W. MIX.

Witnesses:

H. B. PLUMB,
ELISHA MIX.