H. SCHROEDER.

Padlock.

No. 207,310. Patented Aug. 20, 1878.

FIG. 1.

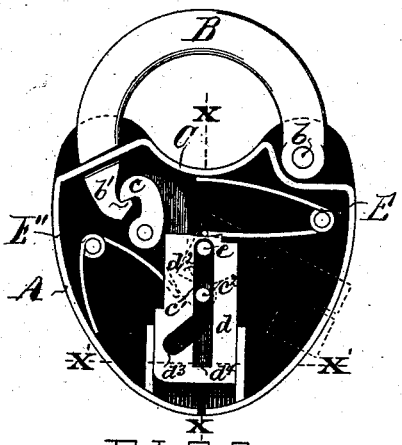

FIG. 2.

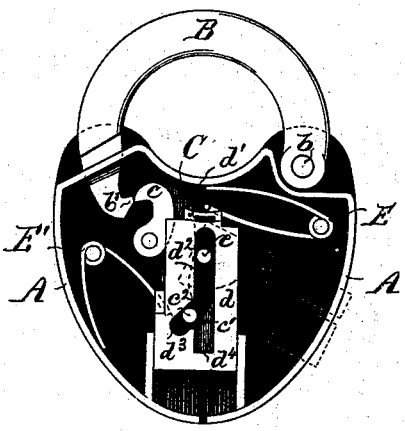

FIG. 3.

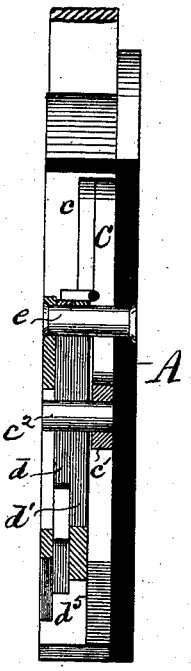

FIG. 4.

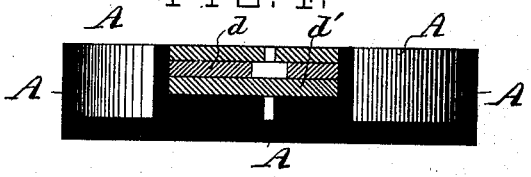

FIG. 5.

ATTEST.

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HERMAN SCHROEDER, OF ST. LOUIS, MISSOURI, ASSIGNOR TO ERNST H. VORDTRIEDE, OF SAME PLACE.

IMPROVEMENT IN PADLOCKS.

Specification forming part of Letters Patent No. **207,310**, dated August 20, 1878; application filed July 3, 1878.

To all whom it may concern:

Be it known that I, HERMAN SCHROEDER, of St. Louis, in the county of St. Louis and State of Missouri, have invented an Improved Lock, of which the following is a specification:

The object of this invention is to achieve simplicity and cheapness of construction, safety and reliability in operation and use, and in constructive principle further be adapted for the formation of the various kinds of locks ordinarily made.

The invention will first be fully described, and the novel construction and combination of parts will hereinafter be pointed out in the claims.

Of the drawing, Figures 1 and 2 are plan views of my improved lock, showing its internal mechanism. (Represented in Fig. 1 in locked condition, and in Fig. 2 in unlocked condition.) Figs. 3 and 4 are each enlarged sectional elevations, taken on lines *x x* and *x' x'*, respectively. Fig. 5 is a plan view of the key used for the lock here represented.

A is the lock-casing. B is the shackle, pivoted at C, and having the notch at *b'*. (See Figs. 1, 2.)

As improved means for locking and unlocking purposes, I have provided the following parts: C represents the bolt or catch. It consists of a plate shaped to have a projection or catch at *c* and the projecting arm at c^1, the plane of the latter being deeper than the former, all shown in Figs. 1, 2, 3. The catch *c* engages with the notch on the shackle, and the arm c^1 and pin c^2 connect the catch *c c c* to the tumblers, while the deeper plane existing in the bolt forms a bearing and guiding surface to the operating-tumblers. The bolt C thus constructed is pivoted in operative relation to the notch of the shackle. (See Figs. 1, 2.)

In the present lock I show two tumblers, *d* d^1, arranged one on top of the other. Each tumbler consists of a plate having an open straight slot, d^2, and, as continuation thereof, the diagonal slot d^3. (See Figs. 1, 2, 3.) Each tumbler is therefore a duplicate of the other so far as the feature of slots d^2 d^3 are concerned; but it will be noticed that the top tumbler has the further slot addition shown at d^4, Figs. 1, 2, 3. The purpose of the slot feature d^2 is to manipulate the bolt. The stationary pin *e*, which projects through each of the tumblers, and the flanges act as guides to the tumblers. (See Figs. 1, 2, 3.)

By means of the diagonal slot d^3 the tumblers, when acting, impart a part arc movement to the bolt C, thus producing the unlocking action. The open cut or slot d^4 is the safeguard feature, to prevent unlocking or opening by picking or false keys. A further feature in the tumblers consists in forming each of different lengths. (See d^5, Fig. 3.) The key-point is therefore shaped to suit the various changes in the length of each tumbler.

In the arrangement of each tumbler the slots in each should be in line, and the rigid as well as movable pin be made to project through the straight part of each slot. The seating of both tumblers is done in partially closed sides and a top plate, the latter being represented in dotted lines, Figs. 1, 2, adjusted out of its true position.

E and E' are coil-springs, arranged as shown in Figs. 1 and 2, and are for the purpose of restoring the respective tumblers, also the bolt, to original position. F represents the key, its bits at *f* being of the different lengths to correspond to the edges presented by the tumblers at d^5. The key-hole is at bottom of the lock.

The internal mechanism being thus constructed and arranged, the operation is as follows: The key is inserted in the key-hole so that the bits *f* of the key come in contact with the lower edge of each tumbler. Then, by forcing the key upward, both tumblers are at same time moved upward. This action permits the pin on the arm of the bolt to travel into the diagonal slots, and in so doing there is imparted a part arc movement to said bolt, which carries its catch away from its shackle, leaving the latter free to be opened. (See Fig. 2.) The springs, as soon as the key has been withdrawn, restore the bolt and tumblers to their first position. The lower tumbler, by virtue of its diagonal slot, is virtually the unlocking-tumbler. The top tumbler has the necessary complement of the diagonal slot, but pre-

vents all unlocking action unless its said diagonal slot is parallel and in line with the same slot in the lower tumbler.

Any action or movement that thrusts the slot feature d^4 in engagement with the pin on the locker fails to unlock the lock. Also, the single operation of one or the other of the tumblers fails to open the lock. The parallel operating relationship of the slotted tumblers forms, therefore, a feature of great importance, as it insures a most perfect, secure, reliable, and excellent lock.

Each lock can contain different number of tumblers capable of being of different sizes; hence no two locks are alike, unless purposely made so.

What I claim is—

1. In a padlock, the combination of a vertically-acting tumbler having the angular slot, as specified, the bolt device carrying a pin by means of which the said bolt can be operated to produce the unlocking action, substantially in the manner and for the purpose set forth.

2. In a padlock, the combination of the bolt device, consisting of a pivoted catch and arm, the latter carrying a pin that projects through the angular slots in the tumblers, the vertical acting tumblers having angular slots, and the additional slot d^4, whereby the unlocking action of the bolt is prevented, in the manner and for the purpose set forth.

3. The improved padlock consisting of the casing A, the bolt C, having catch c, arm c^1, and carrying-pin c^2, the tumblers d d^1, having the slots d^2 d^3, that of d having the additional slot d^4, and the springs E E′, all said parts being combined to operate by means of a key, in the manner and for the purposes set forth.

In testimony of said invention I have hereunto set my hand.

HERMAN SCHROEDER.

Witnesses:
WILLIAM W. HERTHEL,
JOHN W. HERTHEL.