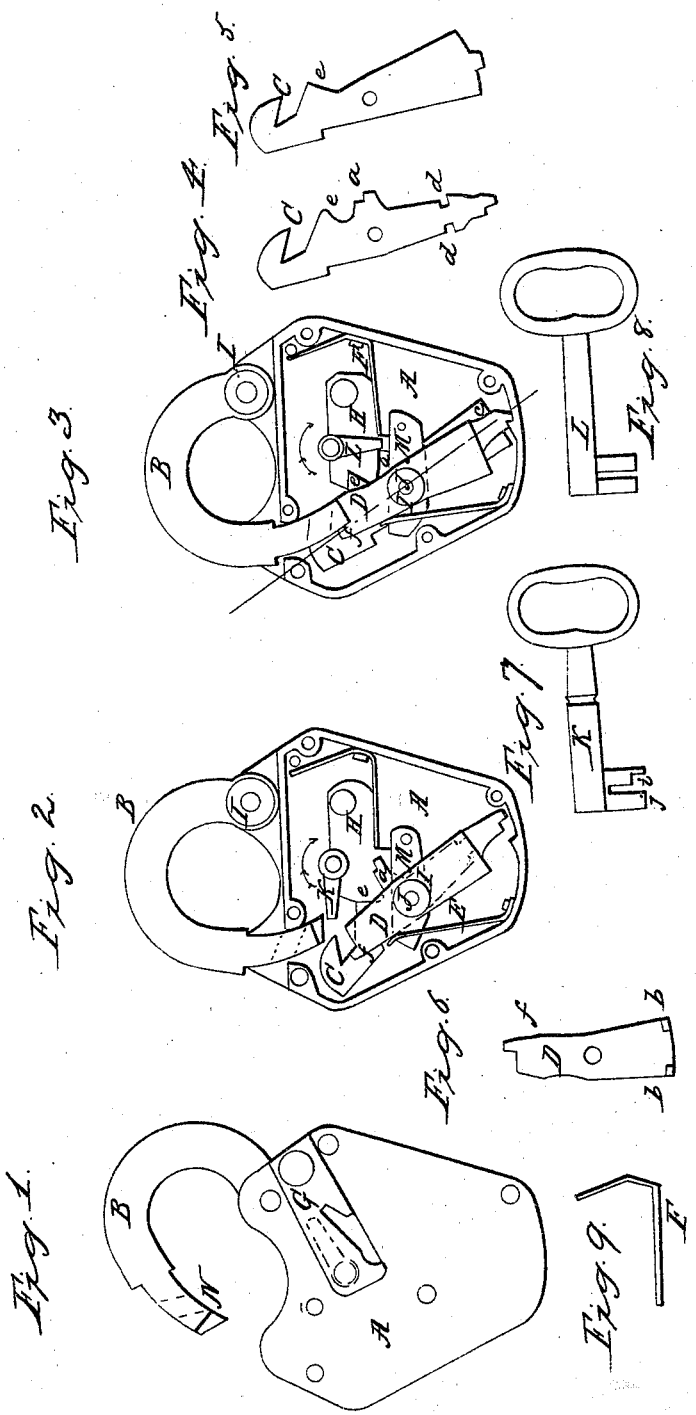
W. Ball,

Padlock.

No. 2,565. Patented Apr. 16, 1842.



UNITED STATES PATENT OFFICE.

WM. BALL, OF WASHINGTON, DISTRICT OF COLUMBIA.

PADLOCK.

Specification of Letters Patent No. 2,565, dated April 16, 1842.

To all whom it may concern:

Be it known that I, WILLIAM BALL, of the city of Washington, in the District of Columbia, have invented a new and useful Improvement in the Construction of Padlocks, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification, of which—

Figure 1 is a view of the outside of the lock showing the escutcheon turned over the key hole (shown by dots) and the shackle disengaged from the hooks. Fig. 2 is a view of the interior of the lock, showing the position of the shackle immediately after it leaves the hooks—the key having pushed the latch and hooks back from the shackle and shown in the act of raising the shackle. Fig. 3 view of the interior showing the shackle locked by the hooks and secured by the latch. Also a false key entrapped in the lock. Fig. 4 one of the hooks whose tail or lower end is lighter than the hook end. Fig. 5 one of the hooks whose tail is made heavier than the hook end. Fig. 6 the latch. Fig. 7 the key. Fig. 8 a false or blank key. Fig. 9 the spring trap.

Similar letters refer to corresponding parts in the several figures.

A, the case, shell, or box; B, the shackle; C, the hooks; D, the latch; E, spring of the latch and hooks; F, the spring trap; G, the escutcheon; H, the wards; I, the washers and J, the stud; K, the key; L, a false key; P, the plate washer.

The nature of this invention and improvement consists in constructing the lock with several turning or vibrating hooks and a latch so formed and arranged as to prevent the lock from being opened by a sudden jar or blow given to the outside of the case. Likewise in the arrangement of a trap spring for catching and holding fast the blank or false key of the lock picker so that it cannot be turned and withdrawn from the key hole after being inserted for the purpose of taking an impression of the wards—which latter improvement can be applied to other locks besides the padlock here described.

To enable others to make and use my lock I will proceed to give a description of the construction and operation of the same.

The case A is made in the usual manner. The shackle B is made like that in common use; except at the end against which the key strikes in turning it to disengage the hooks from the shackle and in the manner of forming the mortise for the hooks. The end of the shackle against which the key strikes when raising it from the hooks is beveled or inclined at an angle of about forty five degrees with a line drawn through the center of the hook as represented by the dotted line in Fig. 3 when the hook is in a locked position. This bevel is to cause the end of the shackle to act on the ends of the hooks (which are also beveled or rounded) in the manner of a wedge, when closing or pushing the shackle into the case, so as to force the hooks back out of the way of the shackle until it is inserted in the case when the hooks are again thrown forward into the mortise of the shackle by the springs placed behind them. Said bevel is also designed to be acted on by the inclined ward or projection *e* of the hook when thrown back from the shackle as will be more particularly described hereafter, and also by the key in raising the shackle as will also be described presently.

A shoulder N is formed on the side of the shackle next the front plate and near the extremity thereof at right angles to the aforesaid line passing through the center of the hooks; against which shoulder the upper end of the latch D is brought for preventing the descent of the shackle below a given point and consequently the shackle is prevented from pushing back the hooks.

The mortise through the shackle to admit the hooks is made at the same angle as the bevel of the end of the shackle—the angle, however, of the mortise may be increased or diminished as found best in practice. Washers of brass are put on the axle of the shackle.

The hook *c* is made in the following described manner. The mortise or depression in the edge of the piece of metal forming the hook *c* is of a corresponding angle to the mortise in the shackle B and to the bevel on the end of the shackle, or nearly so, resembling the geometrical figure called a rhomboid, into which depression the beveled end of the shackle enters. The upper or hook end of one of the hooks, Fig. 4 is made heavier than its lower end so that the superior gravity of the hook end shall cause it to drop into the rhomboidal mortise of the

shackle by a very slight movement of the case. A spring E, however, may be placed behind the hook attached to any convenient part of the case to insure the entrance of the hook into the mortise of the shackle. Both hooks are made alike at the upper or hook ends, but not at the lower or tail ends; the one just described (represented at Fig. 4) is tapered and made light at the lower end: and the other (represented at Fig. 5) is enlarged and consequently made heavier at the lower end for the purpose to be described. Both turn on the same stud J, inserted in the back plate of the case and passed through an aperture in the center of each—having washers I between them to prevent grinding against each other. The object of making one hook heavier than the other, at alternate ends, is to cause them to act against each other in contrary directions on the shackle when the case is struck a blow, or jarred, for the purpose of disengaging the hooks from the shackle, and thus opening the lock—a blow on either side causing the hooks to move in contrary directions and owing to the peculiar inclined plane form of the sides of the mortises of the hooks and the mortise of the shackle, and of the end of the upper ward or projection *e* of the hook and the beveled end of the shackle as before described the above mentioned effect will be produced on the shackle—one hook drawing it down while the other pushes it up and thus the lock will be more securely locked in the very effort to open it—for a blow given to the edge of the case with a view to force the parts asunder by the jar would only cause one of the hooks to have a tendency to enter farther into the rhomboidal mortise of the shackle while the other hook will have a tendency to move in a contrary direction, or to recede from the mortise, but this outward movement is counteracted and the shackle gripped more firmly by the inward movement of the other hook—both hooks acting simultaneously in contrary directions on the inclined surfaces of the mortises and inclined surfaces of the shackle and hooks, thus preventing the possibility of the hooks becoming disengaged from the shackle by blows applied to the outside of the case—even if the additional security of the latch were omitted.

The latch D for securing the hook in the shackle until removed from the latter is connected with the hook placed next the escutcheon plate and turns on the stud J on which the hooks move. The connection is effected by means of two projections or cogs *b b* at the lower corners of the latch next the hook—the space between said cogs in which the tail of the hook is placed and vibrates being sufficient to allow the latch also to vibrate freely over the hook in moving toward or from the shackle without becoming disengaged from the hook—said cogs entering corresponding notches *d d* in the edge of the tail end of the hook *c* Fig. 4.

Another projection *f* extends lengthwise from the upper corner of the latch next the edge of the case for the purpose of striking against the back of the shackle to arrest the latch against it and bring its square or straight end close against the shoulder of the shackle and to make a nice fit therewith. The latch is made heavy at the lower end where connected with the tapered or light end of the hook and of less weight at the upper end next the heavier end of the hook. It is thus made and arranged so as to cause it to remain in contact with the shackle—although the hook from a violent blow on the edge of the case might have a tendency to leave the mortise of the shackle, on the same principle or laws of gravity and moving bodies as illustrated above in describing the operation of the alternate weighted vibrating hooks set in motion by a blow or jar—it being impossible for the hook to leave the mortise of the shackle while the latch is against the shoulder of the shackle.

The latch D is held in contact with the shackle by a spring E attached to the inside of the case and is disengaged from the shackle by the turning of the key, which first disengages the hook and simultaneously the latch, being connected together, as above described.

Washers I are placed on the stud J above the latch to serve the same purpose as those placed on the axle of the shackle pin.

The key K is made with a groove or cavity *j* in the center corresponding with the ward H and a notch *i* correspondent with a projection or ward *a* formed on the edge of the hook next the trap spring F.

To unlock this padlock the escutcheon is moved aside from over the keyhole and the key K inserted in the keyhole and turned in the direction of the arrow, the cavity *j* allowing it to pass over the ward H and the notch *i* over the ward *a* on the hook till the key strikes the latch D which is pushed back and then projection *e* of the hook causing the hook to retreat from the mortise in the shackle and in retreating or turning on the stud J the projection *e* presses against the beveled end of the shackle and raises it slightly when its point is caught by the key in the manner represented in Fig. 2 and lifted from the hook without the aid of any spring.

The shackle is locked by simply pressing it into the case—the springs E forcing the hooks C into the mortise of the shackle and the latch against the shoulder of the shackle.

The plate washers are thin pieces of metal perforated in the middle to slip over the stud. They are placed on the stud one between the inner hook *c* and the back plate of

the case and one between the two hooks and another between the hook *c* and the latch of sufficient length to extend beyond the backs of the hooks and latch to form a rack for keeping the springs in their proper places, and also beyond the front edges of the hooks and latch to a pin passed through them into the case to keep them in place, said washers performing the double purpose of keeping the hooks from rubbing against each other and for confining the springs.

The spring trap for catching the false or blank key of the lock picker when he inserts it to take an impression for making the cavity to correspond with the ward is placed in a horizontal or other more convenient position, being bent at the end next the edge of the case to which it is secured—or it may be made in any convenient form and secured in any convenient manner.

When the false key is inserted in the keyhole is turned around in the direction of the arrow striking the trap spring and pressing it down and continuing to turn until it passes the end of the trap, when the trap flies up behind the key and prevents it from returning to the keyhole, the key being also prevented from turning around toward the shackle for want of the cavity correspondent with the ward *a* on the hook against which the key is arrested (in the manner represented in Fig. 3), the key having been inserted in order to take the impression of this ward on the face of the blank key in the usual manner.

What I claim as my invention and which I desire to secure by Letters Patent is—

1. The principle of locking the shackle, or other similar article, by counter weighted vibrating hooks, arranged in alternate order so as to prevent the lock being opened by a blow on the outside, whether constructed and applied in the manner before described, or in any other mode substantially the same.

2. I likewise claim the mode of holding the end of the shackle in the cavity of the hook or tumbler by means of the latch connected with said hook and resting under and against the shoulder near the end of the shackle, as described.

3. Likewise constructing the lock with a spring trap for catching or entrapping the key of the lock picker, whether constructed and arranged in the manner described, or in any other manner substantially the same, or whether applied to padlocks, or other kinds of locks.

4. The inclined end of the shackle in combination with the inclined projection *e* of the hook or tumbler for the purpose and in the manner set forth.

WM. BALL.

Witnesses:
WM. P. ELLIOT,
E. MAHER.