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YANCEY Q. CALDWELL, OF PARIS, TENNESSEE.

LOCK.

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To all whom it may concern:

Be it known that I, YANCEY Q. CALDWELL, a citizen of the United States, and a resident of Paris, in the county of Henry and State of Tennessee, have made certain new and useful Improvements in Locks, of which the following is a specification.

My invention relates to improvements in locks, more particularly in padlocks, and it consists in the combinations, constructions and arrangements herein described and claimed.

Although the form in which I have shown this device is that of a padlock, it will be obvious that it may be utilized in other forms of locks such as trunk locks, or similar devices.

An object of my invention is to provide a device which is strong and durable, but which is of simple construction, because it consists of relatively few parts.

A further object of my invention is to provide a lock which would be very difficult to pick, owing to the peculiar construction.

A further object of my invention is to provide a device in which the parts may be easily assembled or disassociated.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming part of this application in which similar reference characters indicate like parts in the several views, and in which—

Figure 1 is a perspective view of the device and of a key which is designed to operate it, Fig. 2 is a plan view of the device, the outer cover being removed, a portion of the figure being shown in section, Fig. 3 is a similar view showing the parts shifted to the unlocked position, Fig. 4 is a section along the line 4—4 of Fig. 2, Fig. 5 is a section along the line 5—5 of Fig. 3, Fig. 6 is a plan view of a portion of the lock, certain parts having been removed, showing the slidable spring actuated cam members, Fig. 7 is a perspective view of one of the cam members shown in Fig. 6, Fig. 8 is a view of one face of the actuator or controller plate, Fig. 9 is a view of the other face of the actuator or controller plate, Fig. 10 is a perspective view of the two links, Fig. 11 is a perspective view of the arc-shaped bolt or shackle, and Fig. 12 is a view similar

to Fig. 2, showing a modified form of bolt actuating mechanism.

Referring now to the drawings I have shown therein a lock casing comprising a body portion 1 having laterally extending integral side portions 2, the casing being completed by a cover 3 arranged to be secured to the side walls 2 by means of the screws 4. As will be seen from the drawings this casing has a recess 5 at one end, and at the opposite end an extension 6 for the purpose of attaching a chain or other suspending member. Integral with the body portion 1 is a laterally projecting portion 7 of the shape shown in the drawings.

As will be seen from the drawings the lock is really divided into two circular compartments, one of these compartments having an annular groove 8 between the side wall 2 and the member 7. In this annular groove, the bolt or shackle 9 (see Fig. 11) is arranged to move. The shackle has a cut-out portion 9^a provided with pins 10^b and 10^a for a purpose hereinafter described. The other compartment has an integral lug 11 on one side and a similar lug 11 on the other side with channels for a pair of cams similar to that shown at 13 in Fig. 7. Each cam has a bevel cam surface 13^a, an upwardly extending portion 13^b partly above said bevel surface 13^a, and a spring 13^c at the end of the member opposite the bevel portion. Between the oppositely disposed cams is a recess 14 (see Fig. 6) for the key post as will be explained later.

Referring now to Fig. 9, I have shown therein one face of the actuator or controller plate 15. It is that face which lies next to the body 1. The plate 15 as will be seen has a flange portion 15^a on its edge which fits in the recess 16 between the lugs 11 in which are the channels provided for the cam members 13. The plate 15 is provided with a central opening 15^b having extensions 15^c and 15^d on each side thereof. The plate is also provided with a concrete slot 15^e which terminates in an enlarged opening 15^{ex}, and a concentric slot 15^f which terminates in an enlarged opening 15^{bx}. 15^e and 15^{bx} are curved flanges, the former extending between the extension 15^d and the opening 15^{ex}, and the latter extending between the extension 15^c and the opening 15^{bx}. The opposite side of the actuator or controller plate 15 is shown in Fig. 8. It is provided with the pins 15^x, 15^y and 15^z. The actuator

plate is placed within one of the two cylindrical compartments, as shown in the figures.

The key post, as will be seen from Figs. 3 and 4, comprises a main cylindrical body 5 portion 17 having a flange 17^a and being provided with slots on opposite sides, as shown at 17^b and 17^d. At one end of the key post is a reduced portion 17^c which is arranged to enter the opening 14 in the member 1, as clearly shown in Figs. 4 and 5. The key post 17 is designed to enter the opening 15^b in the plate 15.

In assembling the parts the cam members 13 are first disposed in their runways in the manner shown in Fig. 6. The plate 15 may then be placed in position, the post 17 inserted and when the cam members 13 have been pushed back by means of the key in the manner hereinafter explained, the parts will be in the position shown in Fig. 2. The bolt or shackle is placed in its runway. The link similar to that shown at 18 in Fig. 10 is now placed over the pins 15^v and 10^b (see Fig. 2) the pins entering the eyes 18^a at the ends of the link. A link like that shown at 19 in Fig. 10 is now connected with the pins 15^z and 10^a. It will be noted that the link 19 has an enlarged end 19^a and that the pin 10^a is on a raised portion 9^x of the member 9. This serves to bring the link 19 above the link 18. With the parts in this position the cover 3 may be placed in position and the screws 4 driven home. The cover has an opening to permit the end of the key post to protrude, as shown in Fig. 1. The cover is also slightly recessed at its outer side, as shown at 3^a to form a bearing for the key. There is also a slot for the entrance of the key, as shown at 3^b. A pivoted protective plate 20 is provided as shown.

A key for operating the lock is shown at 21 in Fig. 1. It is provided with a central slot 21^a and with the lateral slots 21^b, 21^c on one side and corresponding slots 21^e, 21^f on the opposite side. The two slots 21^c, 21^f are deeper as may be seen from the drawing.

From the foregoing description of the various parts of the device, the operation thereof may be readily understood.

Let us consider the parts as arranged when the cover was first placed on, *i. e.*, in the position shown in Fig. 2. The device is now in its locked condition. This condition is also indicated in Fig. 1. The key is inserted in the slot 3^b and in the registering slots 17^b and 17^d of the key post 17. The key may now be turned counter clockwise until the pair of projections 21^x engage the bevel faces 13^a of the cam members 13. This will cause the cam members to be pushed outwardly, thereby bringing the portions 13^b of the cam members, which in Fig. 2 were shown in the recesses 15^{ex} and 15^{fx} respectively, into the slots 15^e and 15^f. Further rotation of the key will cause

the rotation of the plate 15, because of the engagement of portions of the key with the flanges 15^z and 15^h (see Fig. 9). The movement of the actuator plate in the direction shown by the arrows in Fig. 1, will cause the movement of the links 18 and 19 and the corresponding movement of the shackle 9 from the position shown in Fig. 2 to that shown in Fig. 3, this, of course, being the unlocked position. The eye, loop, or other body (not shown) which the lock is supposed to engage may now be passed into the recess 5. The key is now in the position shown in Fig. 3 having been turned 180°. It cannot be withdrawn because of the fact that the extensions 15^e and 15^d of the actuator plate have now been turned out of registration with the slots 17^b and 17^d in the key post. This provision for the prevention of the withdrawal of the key, I consider an important feature of my invention. In order to withdraw the key, it must be reversed to its former position. In this operation the actuator plate will be carried back to its original position bringing the parts into the position shown in Fig. 2, *i. e.*, into the locked position, also bringing the recesses 15^e and 15^d into alinement with the slots 17^b and 17^d so that the key may be withdrawn.

In Fig. 12, I have shown a modified form by means of which the actuator plate 15 may operate the bolt or shackle 9. Instead of links such as those shown at 18 and 19 in Fig. 10, I use a series of teeth, such as those shown at 9^t and 15^t. These teeth mesh in such a manner that any movement imparted to the actuator plate 15 will be communicated to the bolt 9. Otherwise the mechanism is the same. In each of these forms, I prefer to have a passage 25 at the bottom of the lock, by means of which water may be drained from the lock, so as to prevent the rusting thereof.

I claim:

1. In a lock, the combination of a casing having a pair of cylindrical compartments, an arc-shaped bolt or shackle in one of said compartments, a circular actuator plate in the other of said compartments, said compartments having means for rotating the actuator in its compartment, and means connecting the actuator with the shackle for rotating the latter in its compartment.

2. In a lock, the combination of a casing having a pair of cylindrical compartments, an arc-shaped bolt or shackle in one of said compartments, a circular actuator plate in the other of said compartments, said compartments having means for rotating the actuator in its compartment, and means comprising a pair of links pivotally connected to both the actuator and the shackle plate for communicating the movement of the actuator to the shackle plate.

3. In a lock, the combination of a casing, a rotatable bolt or shackle, a rotatable actuator for said shackle, means connecting said actuator and said bolt for causing the rotation of the bolt when the actuator is rotated, and a key for rotating said actuator, the shifting of the actuator serving to prevent the withdrawal of the key until the actuator has been returned to its original position.

4. In a lock, the combination of a casing, a rotatable bolt or shackle, a rotatable actuator for said shackle, means connecting said actuator and said bolt for causing the rotation of the bolt when the actuator is rotated, said means comprising a pair of links, each of said links being pivotally connected at their ends to the bolt or shackle and to the actuator.

5. In a lock, the combination of a casing, a rotatable bolt or shackle, a rotatable actuator for said shackle, means connecting said actuator and said bolt for causing the rotation of the bolt when the actuator is rotated, said means comprising a pair of links, each of said links being pivotally connected at their ends to the bolt or shackle and to the actuator, and a key for rotating said actuator, the shifting of the actuator serving to prevent the withdrawal of the key until the actuator has been returned to its original position.

6. In a lock, the combination of a casing having a pair of cylindrical compartments, an arc-shaped bolt or shackle in one of said compartments, a circular actuator plate in the other of said compartments, said actuator plate having a series of arc-shaped slots, means connected with the actuator for operating the bolt or shackle, a pair of cam members having portions arranged to extend into said arc-shaped slots, a key post having slots arranged to register with the extension slots in said actuator plate, a key having portions arranged to engage said cam members to bring them into alinement with said arc-shaped slots, said key also serving to turn said actuator plate and said key post so as to bring said cam members to the opposite end of said slots, the further turning of the key and key post serving to bring the key slots in the key post and in the actuator plate out of alinement and thereby preventing the withdrawal of the key.

ator plate having a series of arc-shaped slots, means connected with the actuator for operating the bolt or shackle, a pair of cam members having portions arranged to extend into said arc-shaped slots, and a key for shifting said actuator plate arranged to engage said cam members to bring them into alinement with said arc-shaped slots.

7. In a lock, the combination of a casing having a pair of cylindrical compartments, an arc-shaped bolt or shackle in one of said compartments, a circular actuator plate in the other of said compartments, said actuator plate having a series of arc-shaped slots and a central recess having extensions on the opposite sides thereof, means connected with the actuator for operating the bolt or shackle, a pair of cam members having portions arranged to extend into said arc-shaped slots, a key post having slots arranged to register with the extension slots in said actuator plate, a key having portions arranged to engage said cam members to bring them into alinement with said arc-shaped slots, said key also serving to turn said actuator plate and said key post so as to bring said cam members to the opposite end of said slots, the further turning of the key and key post serving to bring the key slots in the key post and in the actuator plate out of alinement and thereby preventing the withdrawal of the key.

YANCEY Q. CALDWELL.

Witnesses:

JOSEPH E. ERWIN,
C. ALEXANDER.