

(No Model.)

C. L. WHEELER.

PADLOCK.

No. 339,956.

Patented Apr. 13, 1886.

Fig. 1.

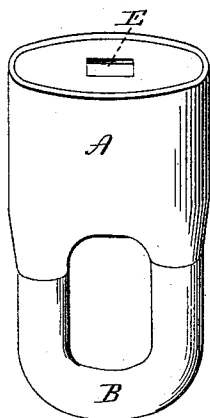


Fig. 2.

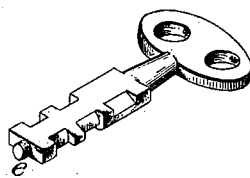


Fig. 3.

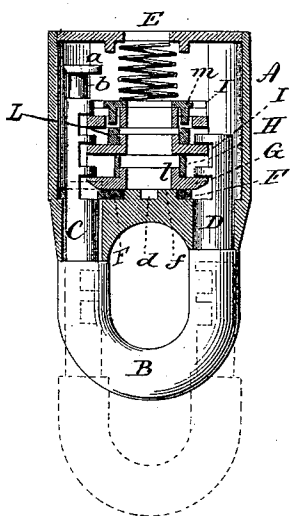


Fig. 4.

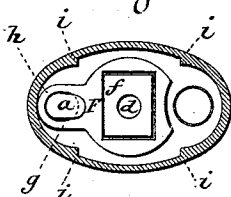


Fig. 5.

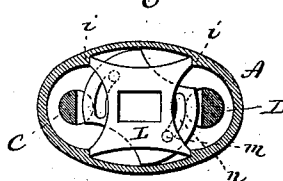


Fig. 7.

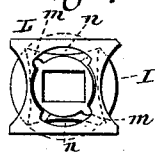


Fig. 6.

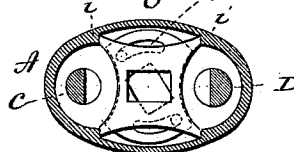


Fig. 8.

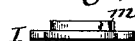


Fig. 9.



Fig. 10.

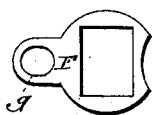


Fig. 11.



Witnesses.
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UNITED STATES PATENT OFFICE.

CLARENCE L. WHEELER, OF SHARON VALLEY, CONNECTICUT, ASSIGNOR OF TWO-THIRDS TO CHARLES C. GORDON AND ALONZO A. BATES, BOTH OF SAME PLACE.

PADLOCK.

SPECIFICATION forming part of Letters Patent No. 339,956, dated April 13, 1886.

Application filed December 28, 1885. Serial No. 186,834. (No model.)

To all whom it may concern:

Be it known that I, CLARENCE L. WHEELER, of Sharon Valley, in the county of Litchfield and State of Connecticut, have invented new Improvements in Padlocks; and I do hereby declare the following, when taken in connection with accompanying drawings, and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a perspective view of the lock complete; Fig. 2, a perspective view of the key; Fig. 3, a vertical section in the plane of the shackle; Fig. 4, a transverse section showing the collar F and its arrangement to secure the shackle to the case; Fig. 5, a transverse section showing a top view of one of the tumblers and its plate in one position; Fig. 6, the same section showing the tumbler in its other extreme position; Fig. 7, a top view of one plate and tumbler detached, illustrating the construction of the stops; Fig. 8, a side view of the tumbler shown in Fig. 7; Fig. 9, a vertical section through the tumbler and plate of Figs. 5 and 6, cutting through the studs on the plate and slots in the tumbler; Fig. 10, the collar F detached; Fig. 11, a face view of one tumbler, showing the roughened surface.

This invention relates to an improvement in that class of padlocks well known as "Scandinavian Padlocks"—that is to say, in which the shackle is of U shape, one leg longer than the other, and arranged in the case so as to slide longitudinally therefrom to bring the shorter leg outside the case, and then so that the shackle may be turned upon the other leg as a pivot to open the shackle, the interior of the lock being provided with tumblers to engage the legs of the shackle when the same is returned to the case, the key being introduced into the case at the end opposite the shackle, and in a line parallel therewith.

The invention relates to the construction of the tumblers; and it consists in such construction as hereinafter described, and more particularly described in the claims.

A represents the case; B, the bow of the

shackle; C, the longer leg, and D the shorter leg, the legs adapted to enter the case in the usual manner. The longer leg, C, at its inner end, is constructed with a hook-like head, *a*, the leg beneath the head reduced so as to form a neck, *b*. At the end of the case opposite the shackle is the usual key-hole, E, concentrically arranged, and within the case, between the legs and opposite the key-hole E, is a recess, *d*, adapted to receive a stud, *e*, on the end of the key. The recess *d* is formed in an inward projection, *f*, in that end of the case. This projection is preferably square, as seen in Fig. 4. The longer leg of the shackle is secured by means of a collar, F, in the case. This collar is in shape as seen in Fig. 10, and is a flat piece of metal having an opening through it corresponding to the projection *f* in that end of the case, and so as to lie flat in that end of the case, as seen in Figs. 3 and 4, the projection *f* serving to locate the collar F and retain it in its proper position when set thereon.

The collar F is constructed with an extension, *g*, toward the longer leg, C, of the shackle, and through that extension *g* is an opening, *h*, corresponding in diameter to the leg C of the shackle, and so that the leg may work freely through it. The head *a* on the end of the leg forms what may be called a "hook," and so that the collar F may be set over the leg C by hooking the head *a* through the opening *h*, which may be readily done before the tumblers are introduced, and when so engaged the collar drops upon its seat around the projection *f*, as seen in Figs. 3 and 4. This leaves the leg C free to move longitudinally through the opening *h* in the collar F, but because the collar F cannot turn out of its plane, which is now at right angles to the axis of the leg C, the hooked end *a* cannot pass through the opening *h* as it overhangs that opening, as seen in Fig. 4. The head *a* thus prevents the shackle from being entirely withdrawn by coming to a bearing on the collar, as indicated in broken lines, Fig. 3, but the shackle is free to be turned on the leg C as a pivot.

This device for holding the longer leg in the

case is extremely simple, and adds substantially nothing to the cost of manufacture of the lock. Tumblers are arranged between the legs in the usual manner, so as to engage notches upon the inside of the legs as the key is turned. This method of holding the shackle is therefore adapted to any of the known construction of tumblers. The tumblers are laid one above another, so as to turn in a plane at right angles to the axis of the legs of the shackle.

In order that the tumblers may retain their proper position in the lock, I have devised a peculiar construction, whereby the rotation of the tumblers will be limited, and at the same time be guided in their rotation and prevented from displacement. The interior of the case is constructed with vertical shoulders *i*, four in number—that is, shoulders parallel with the axis of the legs of the shackle, two shoulders upon each side—as seen in Fig. 4, at equal distances from the center. The first tumbler, *G*, is introduced and rests upon the collar *f*. This tumbler has an upwardly-projecting circular flange, *l*. Upon this a plate, *H*, is arranged, and so as to take a bearing on the said shoulders *i*, to prevent the rotation of the said plate *H*, the shape of the plate being the same as the shape of the plate *L*, as seen in Fig. 5, and which figure shows the bearing of the plate against the shoulders *i*.

The plate *H* has a central opening corresponding to the circular flange *l* on the tumbler *G*. This flange therefore forms a bearing upon which the tumbler *G* may be rotated. Upon this plate *H* a second tumbler, *I*, introduced, and upon this a plate, *L*, (see Fig. 7,) adapted to engage the shoulders *i*, so as to prevent the rotation of the plate *L*.

On the tumbler *I* is a concentric hub, fitting a corresponding opening in the plate *L*, and on the periphery of the hub projections *m* are formed, and in the opening through the plate corresponding recesses, *n*, are formed, so that as the tumbler is turned, the projections *m* will work through the recesses *n* in the plate *L*, say, as from the position seen in Fig. 7 to broken lines in that figure. The ends of the recesses *n* form stops against which the projections *m* may strike at the two extremes of movement of the tumblers, as indicated in Fig. 7.

Instead of making the recesses in the plate and the projections or studs on the tumbler, the tumbler may be constructed with recesses *n*, as seen in Figs. 5 and 6, and the plate *L* with corresponding studs or projections, *m*, upon which the slots or recesses *n* will work in rotation from one extreme to the other, as from Fig. 5 to Fig. 6 and return. In Fig. 3 I show the third tumbler *I* of this last construction. The key is flat in transverse section, its edges having notches corresponding to the tumblers in the usual manner of this class of keys, and as seen in Fig. 2. The

fixed plates in the lock have an opening in them through which the key may freely pass to the tumblers, and when the key is in place the recesses and projections on the edges thereof will work through the plates and against the tumblers, so as to rotate the tumblers to turn them into or from engagement with the shackle as the case may be.

The construction of the key and the general arrangement of the tumblers is common and well known, and I make no claim thereon. The tumblers are also provided with the usual spring to hold them upon their respective seats, as indicated in Fig. 3, through which spring the key is introduced.

In this class of lock as there is no catch or notch with which the tumblers engage when in extreme locked position they are liable to get out of place by any jarring or thumping to which the lock may be subjected, and under careful manipulation they may be brought to the unlocked position by simply pounding lightly upon the case. The only means for securing in place is the friction one upon another, and as the surfaces are generally smooth, or substantially so, their engagement is very slight. To overcome this difficulty and increase the security of the lock, I construct the flat meeting surface of the tumblers with series of grooves, so as to produce slight protuberances on the surface, as seen in Fig. 11. The roughened surfaces, coming together, increase the friction to such an extent that it is difficult to turn the tumblers out of place except through the instrumentality of the key.

I claim—

1. In a padlock of the class described and in which the shackle is of U shape adapted to slide into and from the case, having combined therewith a series of tumblers arranged to turn in a plane at right angles to the legs of the shackle and to engage or disengage the said legs accordingly as the tumblers are in the locked or unlocked position, the tumblers when constructed with their adjacent surfaces roughened so as to produce slight protuberances thereon, substantially as described, and whereby the friction between the tumblers is increased.

2. In a lock of the class described, a plate fixed in the case in a plane at right angles to the axis of the legs and a tumbler in a plane parallel therewith, the said plate forming a bearing upon which the tumbler may rotate, the plate and tumbler, the one constructed with a recess, *n*, and the other with corresponding projections, *m*, the said recesses forming stops to arrest the rotation of the tumblers at their two extremes of movement, substantially as described.

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Witnesses:

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OTTO PUDEMEN.