(No Model.)

W. E. SPARKS.

PADLOCK.

No. 456,744. Patented July 28, 1891.

Fig. 1

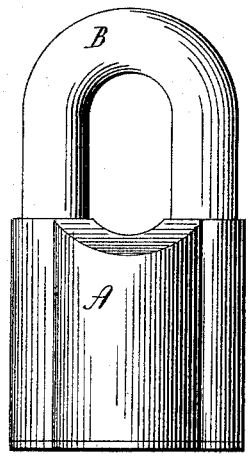


Fig. 2

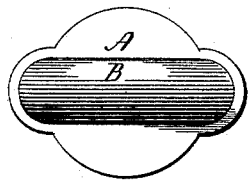


Fig. 3

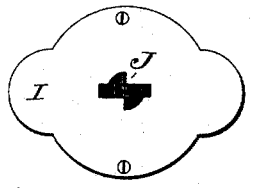


Fig. 4

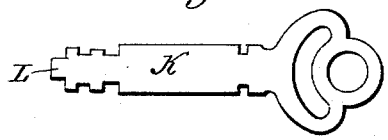


Fig. 5

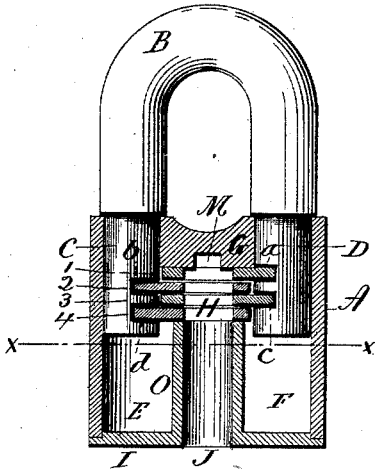


Fig. 6

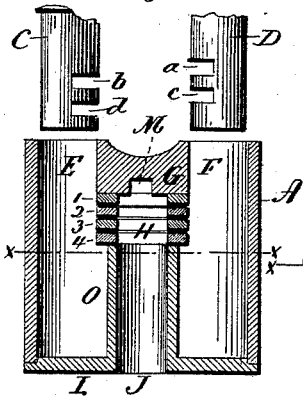


Fig. 7

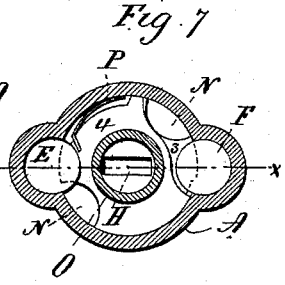
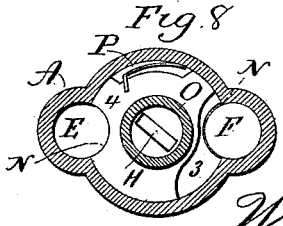


Fig. 8



Witnesses.
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Inventor
By Atty's
Earle & Seymour

UNITED STATES PATENT OFFICE.

WILLIAM E. SPARKS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE SARGENT & COMPANY, OF SAME PLACE.

PADLOCK.

SPECIFICATION forming part of Letters Patent No. 456,744, dated July 28, 1891.

Application filed April 20, 1891. Serial No. 389,639. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. SPARKS, of New Haven, in the county of New Haven and State of Connecticut, have invented a new Improvement in Padlocks; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters and figures 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 front view of the lock complete; Fig. 2, a top view of the same; Fig. 3, a bottom view of the same; Fig. 4, the key; Fig. 5, a vertical section cutting on line *x x* of Fig. 7, showing the shackle in place and engaged with the tumblers; Fig. 6, the same section as Fig. 5, representing the tumblers as turned for the release of the shackle and the shackle withdrawn; Fig. 7, a transverse section on line *x x* of Fig. 5; Fig. 8, a transverse section on line *x x* of Fig. 6.

This invention relates to an improvement in that class of padlocks commonly called "Scandinavian locks"—that is, a lock in which the shackle is of U shape, its two legs adapted to slide into corresponding holes in the top of the case, there being tumblers arranged within the case to rotate in a horizontal plane and so as to be thrown into engagement with corresponding notches in the legs of the shackle, so as to secure the shackle within the case, or when the tumblers are turned from their engaging position the shackle is withdrawn bodily from the case, its withdrawal, in some cases, being arrested by one of the legs, which is made longer than the other, and so as to serve as a pivot on which the shackle may turn in a horizontal plane, so as to bring the other leg away from the case to open the shackle, it being understood that the key-hole is in the bottom of the case, and so that the key is inserted therein parallel with and between the legs of the shackle, so that the key, being rotated, will correspondingly turn the tumblers, the center of the key being the axis of rotation.

In the more general construction of this class of locks the tumblers are arranged so as to rotate in horizontal planes, each tumbler adapted to engage a like notch in both legs of the shackle, the tumblers being constructed with recesses at opposite points corresponding to the legs, so that when turned to bring these recesses into line with the legs the legs may be withdrawn. The notches in the legs for each tumbler, being in the same plane, necessitates a space between successive tumblers, in order to form additional notches in the legs. To produce this space between the tumblers, false tumblers are introduced, said false tumblers also serving as supports or bearings for the tumblers and guides for the key. This construction necessitates long legs to the shank and a corresponding long case, and the necessary presence of the false tumblers correspondingly increases the number of parts of which the lock is composed.

The object of my invention is to avoid the employment of such false tumblers, and thereby simplify and cheapen the construction of the lock; and the invention consists in the construction, as hereinafter described, and particularly recited in the claims.

A represents the case, which in its exterior appearance is substantially the same as the usual construction. Its central portion forms a chamber circular in transverse section, with projections upon diametrically-opposite sides to receive the legs of the shank, as usual in this class of locks.

B represents the shackle, constructed with its two legs C D, adapted to enter corresponding openings E F in the upper end of the case, in the usual manner. Preferably the two legs C D are made of equal length. Within the case several flat tumblers, here represented as four in number and indicated as 1 2 3 4, are arranged in horizontal planes, and lie close together, the upper tumbler resting against a bearing G in the case. These flat tumblers in diameter correspond to the internal diameter of the central portion of the case, as seen in Fig. 7, and so that they may rotate within that portion of the case, as upon an axis. Through each of the tumblers is a central slot H, (see Fig. 7,) and in the bottom I of the case is a central key-hole J, through which the key K, Fig. 4, may be introduced, the key passing through the slots H in the

tumblers, the tip L of the key passing into a central seat M at the upper end of the case, and so that the key being rotated will engage the several tumblers and impart rotation thereto. The openings E F in the case into which the legs pass are in such relation to the central cylindrical portion of the case that the legs when inserted into those openings will project into the central or circular portion of the body, as indicated in Fig. 7. The tumblers are each constructed with a recess N in their peripheries, which, when the tumblers are rotated to a predetermined position, will be brought into line with the openings E F, (see Fig. 8,) and so that the legs of the shackle may pass freely into or out of the openings E F; but when the tumblers are turned so as to take these notches or recesses N away from the openings E F the periphery of the tumblers will be brought to the openings, as seen in Fig. 7, thus interrupting, or to a considerable extent cutting off, those openings. The two legs of the shackle are constructed with notches *a b c d*, as seen in Fig. 6, corresponding to the several tumblers when the shackle is within the case, as seen in Fig. 5. The notches in one shank are in a plane between the notches of the other shank, as clearly seen in Fig. 6, instead of being arranged in the same plane, as in the more general construction of shackles. The tumblers being turned so as to bring the recesses N into line with the openings E F, as seen in Fig. 8, the shackle is introduced, the two legs passing freely into the said openings to their place of rest. Then the tumblers being turned by the key, their peripheries will pass into the respective notches in the legs of the shackle, as seen in Figs. 5 and 7, and thus interlock the shackle with the tumblers.

The tumblers are simply thin flat metal disks arranged close together and near the upper end of the case. To support the tumblers and give the required length to the case, the bottom I of the case is constructed with a central tube O, upon its inside, of a length corresponding to the distance from the inside of the bottom I to the lowest tumblers, as seen in Fig. 6, and so that the bottom secured in the case, the tube O will bear against the lower tumbler, and thus support the tumblers in their proper position between the end of the tube O and the bearing G above; but so that they may be readily rotated by the action of the key. The said tube also serves as a guide for the key, directing it into the slots of the tumblers.

To prevent accidental turning of the tumblers, or so as to yieldingly hold them in their locked or unlocked position, each tumbler is provided with a spring P at its edge to bear against the inner surface of the case, as seen in Fig. 7. The frictional contact between the inner surface of the case and the spring of the tumbler on one side and the periphery of the tumbler upon the opposite side is sufficient to retain the tumblers in any position to which they may be turned, but yet allow them to be rotated under the action of the key.

The edge of the tumblers is cut away at points so as to lessen the extent of bearing, and so that when a tumbler is brought into its position with its notch corresponding to the shackle-opening on one side the other side will not interfere with the entrance of the leg upon that side, it being understood that the tumblers alternate, one engaging one leg on one side while the next tumbler engages the opposite leg on the opposite side.

In the construction shown the shackle is represented as to be removed entirely from the case. This is a common construction in Scandinavian locks; but the shackle instead of being entirely removed from the case, one leg may be longer than the other and serve as a pivot, when the shackle is withdrawn so far as to take the other leg from its opening in the case—an expedient too well known in this class of locks to require illustration.

By this construction the number of parts of the lock is very greatly reduced, the lock correspondingly simplified and cheapened in its construction, and because of the less number of parts and bearings the wear in the use of the lock is very much reduced.

I claim—

1. In a padlock, the combination of a case having a central chamber circular in transverse section, with a projection at each side opening at the top of the case, the said openings extending into the central chamber of the case, one or more tumblers arranged in horizontal planes and supported against a bearing within the case, the bottom of the case constructed with a central tube as an integral part thereof extending inward, and so as to form a bearing against the said tumblers opposed to the said bearing in the case against which the tumblers rest, the bottom, also constructed with a key-hole extending through said tube, and the tumblers constructed each with a slot corresponding to the key, and so that the said tube serves as a guide for the key into said slots of the tumblers, the tumblers constructed each with notches in their periphery corresponding to the openings at the respective sides of the case, and a U-shaped shackle the two legs of which are adapted to pass into the said openings in the case and project into the said central chamber, the legs constructed with notches corresponding to the respective tumblers, substantially as described.

2. In a padlock, the combination of a case having a central chamber circular in transverse section, with a projection at each side opening at the top of the case, the said openings extending into the central chamber of the case, several flat tumblers arranged one upon another and supported against a bearing within the case, and so as to rotate in horizontal planes, the periphery of said tumblers at one point being adapted to extend

into said openings, while the opposite side of the same tumbler escapes the opening upon the other side, the tumblers being arranged so as to make such projections into the openings alternate first one side and then the opposite side, and a U-shaped shackle the two legs of which are adapted to extend into said central chamber, the legs constructed with notches upon their inner side, the notches on one side in planes between the notches on the opposite side and corresponding to the alternately-projecting portion of the several tumblers, the bottom of the case constructed with a key-hole adapted to receive a key centrally through it, and the tumblers constructed with slots corresponding to said key, whereby the rotation of the key will impart corresponding rotation to the tumblers, substantially as and for the purpose described.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

WILLIAM E. SPARKS.

Witnesses:
I. B. SARGENT,
CHAS. L. BALDWIN.