(No Model.)

S. P. STEIN.

PADLOCK.

No. 457,678. Patented Aug. 11, 1891.

Fig. 1.

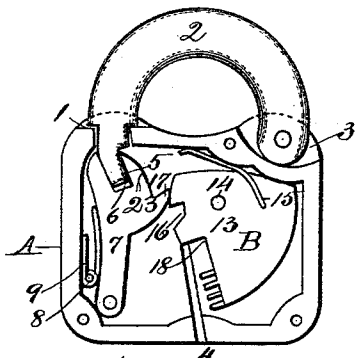


Fig. 2.

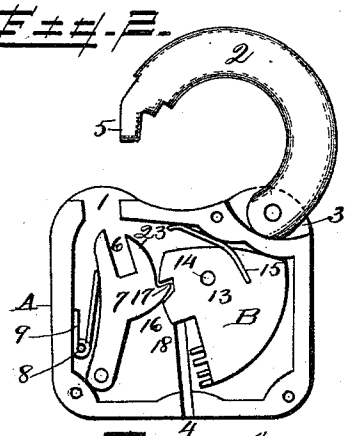


Fig. 3.

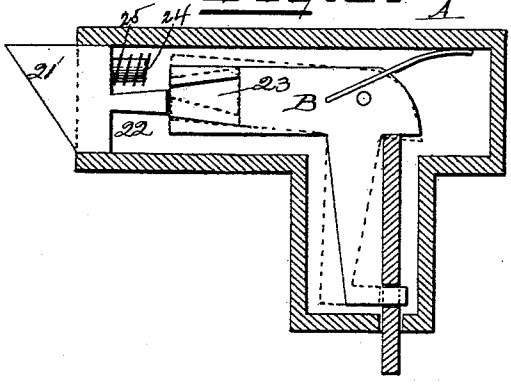


Fig. 4.

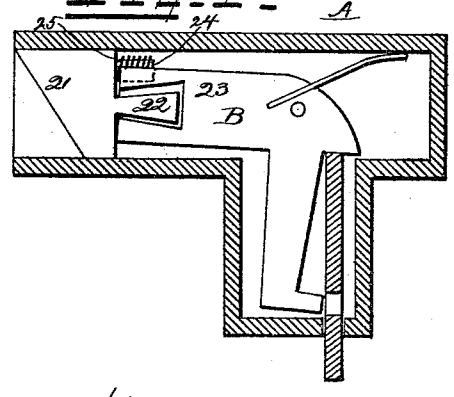


Fig. 5.

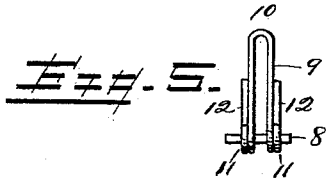


Fig. 7.

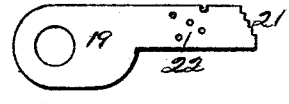
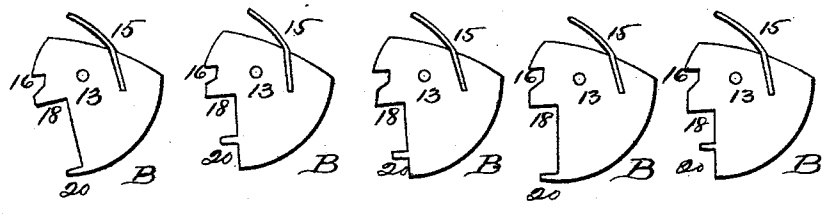


Fig. 6.



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PADLOCK.

SPECIFICATION forming part of Letters Patent No. 457,678, dated August 11, 1891.

Application filed January 28, 1891. Serial No. 379,355. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL P. STEIN, a citizen of the United States, residing at Milton, in the county of Northumberland and State of Pennsylvania, have invented certain new and useful Improvements in Locks, of which the following is a specification.

My invention relates to improvements upon the lock described in Letters Patent No. 440,069, issued to myself and assignees under date of November 4, 1890.

The invention contemplates the application of the principle of operation disclosed in the Letters Patent above referred to to a variety of forms of locks—as, for example, trunk and satchel locks, door-locks, &c., as well as to padlocks.

The invention consists in the features of construction hereinafter fully described, and pointed out in the claims.

In the drawings, Figure 1 is an elevation of my improved lock arranged as a padlock, one of the plates of the casing being removed to show the mechanism in locked position. Fig. 2 is a similar view showing the relation of the parts in unlocked position. Figs. 3 and 4 illustrate my improvements in connection with an ordinary locking-bolt, adapted for use as a door or other lock. Fig. 5 is a view of the locking-dog spring detached. Fig. 6 shows the tumblers in detail. Fig. 7 illustrates the key.

Referring to Figs. 1 and 2, A designates the lock-casing (one side only being shown) formed with an opening 1 for the nose of the shackle 2, seat 3 for the pivoted end of the shackle 2, and a key-hole 4. The locking end of the pivoted shackle is formed with an inclined nose 5, adapted to enter correspondingly-inclined slot 6 in the upper end of a locking-dog 7. The dog 7 is pivotally secured upon a stud within the casing, and between the dog and casing, upon a stud-pin 8, is fixed a spring 9 for forcing the dog toward the tumblers. In Fig. 5 I have shown the spring detached. This spring consists of a loop 10, adapted to bear against the dog, opposite coils 11, and parallel ends 12, the last bearing against the casing. Thus it will be perceived that the spring is practically a double one, and in the event of breakage at either side of the loop 10 the remainder of the spring will operate the dog.

B designates the tumblers, each consisting of a metal plate having an opening 13 to receive the pivot 14. Each tumbler has a spring 15 fixed thereto, the free end of which bears against the rim of the casing. The office of these springs is to throw the heel ends of the tumblers away from the dog. Each tumbler is formed with a notch or slot 16, said slots being arranged to register to form a seat for a lug 17, projecting from the dog.

Below the slot 16 on each tumbler is a shoulder 18, against which the end of the key engages when pushed into the lock to raise the tumblers. These shoulders are of different depths in the respective tumblers in order that they may be pushed to alignment or into operative position by the corresponding steps on the key 19. At the heel of each tumbler is a projection 20, preferably made to engage similarly-shaped holes in the key. These tumblers may in number be two or more. The drawings show five tumblers. The key 19 consists of a flat metal plate provided at its end with graduated steps 21, arranged to correspond to the varying positions of the shoulders in the respective tumblers. A number of holes 22 are formed in the key, as shown, into which the projections 20 enter. These holes register with the line movement of the projections on the tumblers, so that when a key is inserted which is designed to unlock the mechanism the projections will enter the holes of the key when the key is pushed in far enough to lift the tumblers to their unlocked position. If a key is inserted which has no holes or has holes which do not register with the line of movement of the heel projections of the tumblers, the tumblers cannot be moved far enough to disengage them from the locking-dog. The dog 7 is formed with a lug 23, which not only forms one of the walls of the slot 6, but serves to hold the nose of the shackle in locked position. When the proper key is employed, the tumblers are elevated until the lug 17 drops into the slots of the tumblers by the force of the spring 9, which movement disengages the nose of the shoulder and springs it out of the casing.

The arrow-head form of the nose of the shackle in the Letters Patent referred to heretofore is objectionable where the padlock is employed in fastening flexible closures, as mail-bags, because the points or projections on the nose are liable to catch upon and tear the material or engage and cling to any opening that may be in them. By employing the locking-dog with its inclined nose to engage the inclined slot the objection is avoided.

In Figs. 3 and 4 I have illustrated a modified form of lock, in which 21 designates a bolt having a projecting dog adapted to enter an inclined slot 23 in the tumblers. The bolt 21 is provided with a pin 24 and a spring 25, the force of the spring being to throw the bolt into connection with the tumbler-slots when the tumblers are raised to a position where their slots are opposite to the dog 22. The bolt is returned to locked position by a finger-button (not shown) projecting through the casing. By forming the slot 23 inclined or widened at the rear, as shown in Figs. 3 and 4, the tumblers are allowed sufficient movement to not obstruct the withdrawal of the key after the tumblers are turned.

I do not limit myself to any specific form of locking-dog, as various forms of dog may be employed in connection with bolts of different construction.

Having thus described my invention, what I claim is—

1. In a lock, the combination, with a casing, of two or more pivoted tumblers, each formed with a slot and a projection, a pivoted locking-dog, and a shackle or bolt, the free end of which is adapted to be engaged by said dog and held by frictional contact therewith, substantially as described.

2. In a lock, the combination, with a casing, of two or more pivoted tumblers, each formed with a heel projection and with an inclined or widened slot, a bolt or shackle, a pivoted locking-dog projecting into the slots of the tumblers, and a key formed with perforations corresponding to the projections on the tumblers, substantially as described.

3. In a lock, the combination, with a casing and a pivoted shackle formed with an inwardly-inclined nose, of a locking-dog formed with a projecting lug, and an inclined slot to receive the nose of the shackle and hold it in locked position by frictional contact, two or more tumblers, each provided with a slot and with a heel projection, and a key having holes corresponding to the heel projections of the tumblers.

4. In a lock, the combination, with a casing and a bolt or shackle, of a locking-dog formed with a lug, a series of tumblers, each formed with a slot and a shoulder 18, and a double spring 9, interposed between the locking-dog and the casing, substantially as described, and for the purpose specified.

5. The combination, with the casing formed with a key-hole, of a shackle or bolt, a series of tumblers, each formed with a slot 16, a shoulder 18, and a projection 20, a key formed with end steps and with holes corresponding to the projections 20, and a locking-dog adapted to project into slots of the tumblers, substantially as described.

6. In a lock, the combination, with the casing and a pivoted shackle having an inwardly-inclined nose at its free end, of a pivoted locking-dog formed with an inclined slot to take the nose of the shackle and with a lug on its inner edge, and pivoted tumblers arranged to engage the lug on the locking-dog and hold it in locked position, substantially as described.

7. In a lock, the combination, with the casing, of a pivoted shackle formed with an inwardly-inclined nose to enter an opening of the casing, a pivoted locking-dog formed with an open-end slot correspondingly inclined to the nose of the shackle to receive and hold the shackle, and means for holding the dog in connection with the nose of the shackle, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two attesting witnesses.

SAMUEL P. STEIN.

Attest:
A. G. HEYLMAN,
WM. H. BATES.