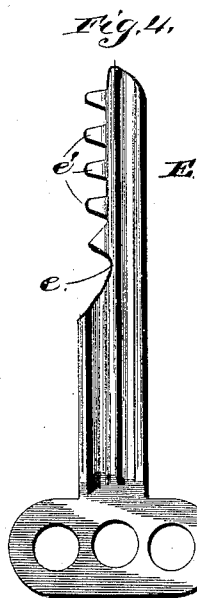
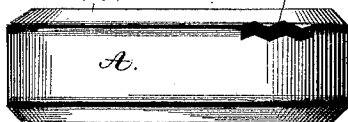


A. S. FISHER.
PADLOCK.

Patented Mar. 4, 1890.



Witnesses.
Walter H. Humphrey.
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UNITED STATES PATENT OFFICE.

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PADLOCK.

SPECIFICATION forming part of Letters Patent No. 422,759, dated March 4, 1890.

Application filed February 5, 1889. Serial No. 298,698. (No model.)

To all whom it may concern:

Be it known that I, ANDREW S. FISHER, a citizen of the United States, residing at Bedford, in the county of Bedford and State of Pennsylvania, have invented certain new and useful Improvements in Locks and Keys; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in locks and keys; and it consists in the construction and combination of the parts thereof, as will be more fully hereinafter described and claimed.

The essential features of my invention are a shackle controlled by a dog actuated by a toothed tumbler, which in turn is operated by a toothed key.

The object of my invention is to provide a lock of the character set forth which cannot be readily picked or tampered with by the use of instruments ordinarily employed for this purpose, but which is easily opened by using the proper form of key, the parts being few in number and of simple and effective construction and operation.

I have fully illustrated my improved lock in the accompanying drawings, wherein like letters of reference are used to designate similar parts in the several views, and in which—

Figure 1 represents a perspective view of the lock with part of the casing removed. Fig. 2 is a top plan view thereof with a part of the casing removed and the toothed dog detached, showing the shackle open. Fig. 3 is a bottom edge elevation of the lock entire. Fig. 4 is a detail view of the key.

A indicates the main casing, having projecting studs a , adapted to pass through apertures in a covering-plate A' and be swaged down to secure the latter plate to the casing, and thereby securely house the parts of the lock. The casing A is preferably made by casting, but may be otherwise constructed, if desired, and has a deep recess a' formed therein, partially surrounded at one side by a recess a^2 of less depth. The one side of the casing A opposite the key-opening is formed with a straight wall a^3 , aligning with the shackle-opening in the top of the casing, and which also forms the limitation at this point

of the recess a' . The said wall is formed with a recess a^4 , for the purpose more fully hereinafter referred to. The top edge of the casing A is also formed with a recess a^5 , for the reception of the one end of the shackle, and, having a rear wall, it prevents twisting of shackle by forcible means.

A post c rises about centrally from the casing A up through the recess a' , and when the plate A' is applied the upper end thereof passes through an aperture in said plate. Upon this post c a dog C is eccentrically mounted, and is constructed with an apertured lug c' on one edge thereof and a smaller lug c^2 projecting upward from one side at the one end. The lug c' receives one end of a spring S, whose lower end is attached to a lug formed with the bottom of the leg of the shackle. The said shackle B is constructed with a single leg, whose upper end is turned over in order to engage the recess a^5 in the top of the casing A. The outer edge of the shackle-leg is constructed with a lug b , adapted to engage the recess a^4 , and thereby limit the movement of and prevent disengagement of the shackle from the lock. The inner edge of the shackle is formed with a curved recess b' , with which one end of the dog C is adapted to engage. The lower end of the shackle-leg is also provided with an integral laterally-projecting lug b^2 , to which the lower end of a spring S is connected, as hereinbefore referred to. The one side of said shackle-leg is also cut away to form a shoulder b^3 , and is curved or concaved from said shoulder upward.

On the post c , over the dog C, a tumbler D is mounted. This tumbler has a slot d , of circular configuration, and a projection or shoulder d' at one side thereof to bear against the shoulder b^3 of shackle B. The circular slot d receives the lug c^2 of dog C, which projects upward therethrough. The opposite side of the tumbler is also formed with a projection d^2 , against which the end of the key is adapted to bear, and from said projection, some distance around the periphery of the tumbler, teeth d^3 are formed. The said tumbler D is formed of substantial circular configuration; but it is not essentially necessary that this form should at all times be employed so long as the toothed edge is curved.

At the termination of the teeth d^3 a further projection d^4 is formed, which coacts with the key, as will be presently described.

One side of the bottom edge of the casing is provided with an angularly-corrugated key-opening w , into which a key E is adapted to be inserted. The key is in like manner formed with an angular corrugated blade or shank, whose one edge is constructed with an indentation or recess e , and from this recess e outward to the end of the key a series of teeth e' are cut.

As shown in the drawings, the upper end of the casing and the top of the shackle are curved to fit a staple or other device.

The operation of the lock is as follows: When the key E is inserted, the end thereof strikes the projection d^2 of the tumbler D and turns the same until the teeth d^3 mesh with the teeth e' of said key. An inseparable engagement of the key and tumbler is thus provided, and as the key is farther pressed into the lock the tumbler continues to revolve on post c . As soon as the said tumbler D starts to revolve it draws the dog C around therewith through the lug c^2 . The dog C is turned in the direction of the arrow and pulls the spring S until said dog has traveled past its center, when the shackle B is unlocked and automatically impelled outward by the action of said spring, which is secured to the lower end thereof, as fully set forth. The shackle B now having moved outward, its lower end draws up close to the dog C, and the retractile effort of the spring S becomes relaxed, the parts assuming the position shown in Fig. 2. In withdrawing the key the tumbler D is brought back to its normal condition, and in closing the shackle the spring S draws on the dog C and throws it back to its normal locking position, and also holds the tumbler D in place, which latter is prevented from moving past its normal position by the shoulder or projection d' striking against the shoulder b^3 of the shackle. When the dog C is in its normal locking position, it lies slightly diagonal across the lock, its one end snugly fitting in the curved recess b' , and its opposite end bears against the wall of the recess a' . Any attempt to withdraw the shackle by force will be frustrated by the dog C, as when the end thereof lying in the recess b' of the shackle is drawn upward the opposite end is forced downward and forced against the wall of said recess b' , and the shackle thereby wedged in.

The number, size, and shape of teeth in the key and tumbler may be varied to suit

different conditions and to somewhat change the combination.

This invention of lock and key is intended to be used in all locks, such as doors, trunks, and for all other purposes where locks and keys are used in substantially the manner as herein set forth and described.

Having thus described my invention, what I claim as new is—

1. In a lock, the combination of a shackle, an eccentrically-mounted dog having a flexible spring-connection therewith, a toothed tumbler, and a toothed key, substantially as described.

2. In a lock, the combination, with a shackle, of a dog constructed and operating to engage and lock the shackle when the latter is retracted within the case or shell, and having a spring-connection with said shackle, which operates to automatically impel the shackle outward when the dog is released from positive engagement with said shackle, and means for releasing the dog from positive locking engagement with the shackle, for the purpose described, substantially as set forth.

3. In a lock, the combination, with a shackle, of an eccentrically-mounted dog connected thereto and a toothed tumbler connected to the dog, whereby the tumbler when operated by the proper key is adapted to turn the dog and release the shackle, substantially as and for the purpose described.

4. In a lock, the combination, with a shackle, of an eccentrically-mounted dog, a flexible spring-connection intermediate of the dog and the leg of the shackle, and a toothed tumbler loosely mounted on the pivot of the dog and having a slot-and-pin connection with said dog, substantially as and for the purpose described.

5. In a lock, the combination of a casing having suitable recesses therein, an eccentrically-mounted dog having an edge lug and a lug projecting up from one end thereof, a shackle having a lug at the bottom of the leg and at one side thereof, a coiled spring connecting the edge lug of the dog with the shackle-lug, a toothed tumbler having a slot therein engaging the end lug of the dog, and a toothed key for operating the parts, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ANDREW S. FISHER.

Witnesses:

W. F. MOORE,
JNO. G. FISHER.