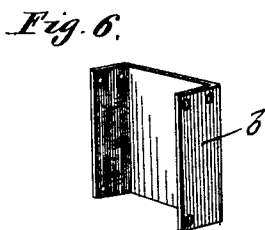
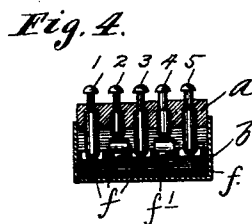
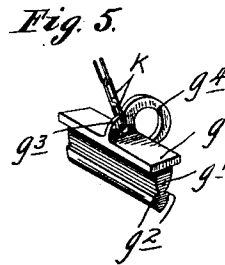
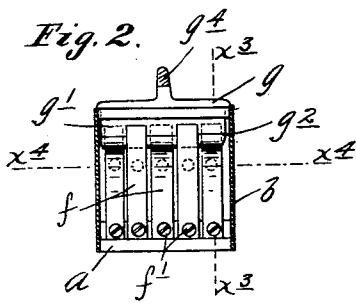
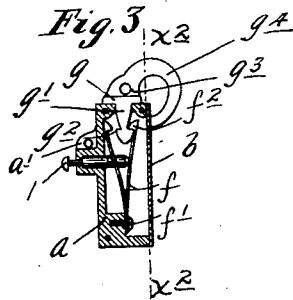
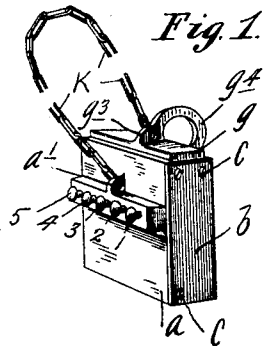


(No Model.)

C. P. CHASE.
PERMUTATION PADLOCK.

No. 587,703.

Patented Aug. 10, 1897.



Witnesses
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UNITED STATES PATENT OFFICE.

CORNWELL P. CHASE, OF MINNEAPOLIS, MINNESOTA.

PERMUTATION-PADLOCK.

SPECIFICATION forming part of Letters Patent No. 587,703, dated August 10, 1897.

Application filed March 9, 1897. Serial No. 626,569. (No model.)

To all whom it may concern:

Be it known that I, CORNWELL P. CHASE, a citizen of the United States, residing at Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Permutation-Padlocks; 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 has for its object to provide an improved padlock of the permutation type adapted for use in locking bicycles and for many other purposes, which lock is so constructed that it may be operated by one knowing the combination as well in the dark as in the light, or, in other words, by the sense of touch.

To the ends above noted my invention consists of the novel devices and combinations of devices hereinafter described, and defined in the claims.

The preferred form of my invention is illustrated in the accompanying drawings, wherein, like characters indicating like parts throughout the several views—

Figure 1 is a perspective view of my improved lock. Fig. 2 is a vertical transverse section through the lock, taken on the line $x^2 x^2$ of Fig. 3. Fig. 3 is a vertical section through the lock, taken on the line $x^3 x^3$ of Fig. 2. Fig. 4 is a horizontal section through the lock, taken on the line $x^4 x^4$ of Fig. 2. Fig. 5 is a perspective view of the removable lock-section or lock-block removed from the lock. Fig. 6 is a perspective view of a portion of the lock-case removed; and Fig. 7 is a detail view in plan with some parts broken away, showing one of the detent-operating keys or plungers removed from the lock-case.

The body of the lock-case is formed by a recessed section a and a thin flanged or channeled piece b , which parts are secured together by means of screws c .

f indicates a series of spring-detents which, as shown, are in the form of leaf-springs, secured at their lower ends by means of screws f' or otherwise to the interior of the lock-case, and are provided at their free ends with detent-hooks or lugs f^2 . Certain of these spring-detents f normally stand to one side of the

center of the lock-case and others stand on the opposite side of said case. The detent-hooks f^2 of all of the spring-detents f are turned inward or toward the center of the lock-case, and their exact relations will be pointed out later on. As shown, there are five of the detent-springs f . Each detent-spring f is adapted to be pressed by a key or plunger which is mounted to move through a suitable seat formed in the lock-case section a . The keys or plungers are marked successively 1, 2, 3, 4, and 5. By reference particularly to Fig. 4 it will be noted that the keys or plungers numbered 1, 3, and 5 are relatively long as compared with the keys or plungers marked 2 and 4 to adapt the same for the proper engagement with the different classes of detent-springs f . By reference particularly to Fig. 7 it will be noted that the said plungers are formed in two sections, which are screwed together after they have been placed within their seats.

g indicates the removable lock-section or lock-block, which is adapted to be inserted through a suitable seat formed in the end of the lock-case a b , adjacent to the free ends of the spring-detents f . The inwardly-projecting portion of this lock-block g is in the form of a flange or rib g' , which is provided on the opposite faces of its inner edge with elongated lock channels or shoulders g^2 , with which the detent-lugs f^2 of the detent-springs f are adapted to engage to lock the lock-block g to the lock-case. The inner edge of the flange g' and the outer extremities of the detent-lugs f^2 are beveled, so that when the lock-block g is forced inward said lugs f^2 will be automatically engaged with said lock channels or shoulders g^2 .

k indicates a chain or shackle, one end of which is secured to an eye a' on the lock-case section a and the other end of which is secured to an eye g^3 on the removable lock-block g . Preferably the lock-block g is also provided with a hook-like finger g^4 , by means of which the end of a loose chain or shackle or similar device may be locked or secured to the lock-case. It will be noted that the exterior portion of the lock-block g is flanged or laterally expanded, so as to effectually prevent the introduction of a sharp instrument through the lock-block seat in the end of the

lock-case, a performance which might be attempted by a person desiring to tamper with the lock.

The normal positions of the spring-detents f and keys which operate the same are best illustrated in Figs. 3 and 4, by reference to which it will be seen that the detents which are operated by the keys 1, 3, and 5 are under strain to keep engagement with the right-hand member of the lock-shoulders g^2 of the lock-block g , while the detents which are operated by the keys 2 and 4 normally stand out of engagement with the left-hand member of said shoulders g^2 . Hence to release the lock-block g it is necessary to simultaneously press upon the keys 1, 3, and 5 without pressing upon the keys 2 and 4 at the same time. If either of the keys 2 or 4 are pressed upon, the spring-detents upon which they in turn operate will be forced into engagement with the cooperating lock-shoulder g^2 , and thus prevent the removal of the lock-block g . It thus becomes evident that in order to unlock or release the lock-block g it is necessary to simultaneously press upon all of the releasing-keys without at the same time depressing any of the other keys. To accomplish this, the operator must know the combination for which the lock is set. The combination may be varied at will by interchanging or rearranging the detents and their keys or operating-plungers. It is also obvious that a greater or less number of keys and detents may be employed and that the greater the number of said keys and detents the greater will be the difficulty of discovering the combination for which the lock is set by a person attempting to tamper with the lock. I consider that the number of keys and detents shown will give reasonable security for ordinary purposes.

A person familiar with the combination may of course readily operate or unlock the lock in the dark, as he can readily determine the proper keys to be pressed by the sense of touch alone. This feature gives the device additional value as a bicycle-lock, in which use it is often found necessary to unlock the lock in the dark.

The word "shackle" is used generically in the specification and in the claims and is intended to include either a chain or a link.

From the foregoing description it is thought to be evident that various alterations in the specific details of construction above set forth may be made without departing from the spirit of my invention.

What I claim, and desire to secure by Letters Patent of the United States, is as follows:

1. A lock constructed in two parts, adapted to be locked together, and when unlocked, to be separated for application to the device to be locked and provided with a series of detents, mounted on one of said parts and engageable with the other, certain of which detents normally stand in locking positions, but are moved into releasing positions, when pressed, and others of which detents normally stand in releasing positions, but are moved into locking positions, when pressed, substantially as described.

2. A lock constructed in two parts, adapted to be locked together, and when unlocked, to be separated for application to the device to be locked and provided with a series of detents, mounted on one of said parts and engageable with the other, certain of which detents normally stand in locking positions, but are moved into releasing positions, when pressed, and others of which detents normally stand in releasing positions but are moved into locking positions, when pressed, and a corresponding series of finger-operated plunger-keys, for pressing said detents, substantially as described.

3. In a lock, the combination with the lock-case, of the series of leaf-spring detents, certain of which normally stand in locking positions and others of which normally stand in releasing positions, of a corresponding series of plunger-keys for pressing said spring-detents out of their normal positions, and a removable lock section or block provided with a lock-flange portion, and adapted to be separated from said lock-case and which, when inserted into the lock-case, is locked in position by certain of said spring-detents, substantially as described.

4. In a lock, the combination with a suitable lock-case, of the series of leaf-spring detents $f f^2$ mounted therein, the plunger-keys 1, 2, 3, 4, 5 for pressing said detents, the removable lock section or block $g g'$ with lock-shoulders g^2 , and the chain k or other shackle, connecting said lock-block $g g'$ with the lock-case, with freedom for limited movements, substantially as described.

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

CORNWELL P. CHASE.

Witnesses:

L. C. ELMORE,
F. D. MERCHANT.