(No Model.)

C. T. JOHNSON.

LOCK.

No. 518,211. Patented Apr. 10, 1894.

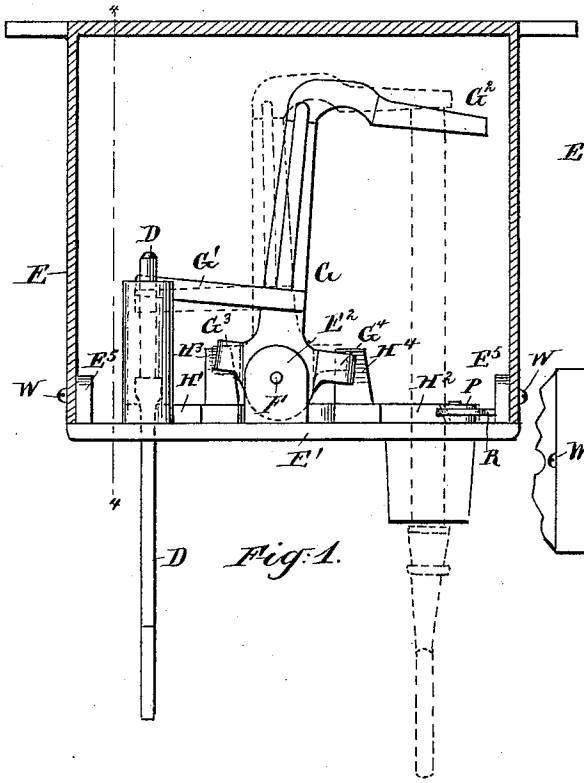


Fig. 1.

Fig. 3.

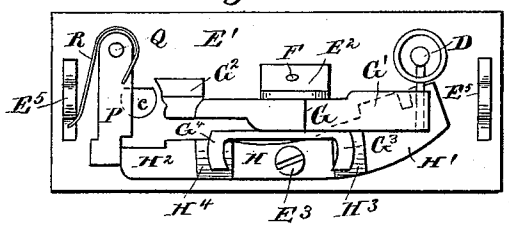


Fig. 2.

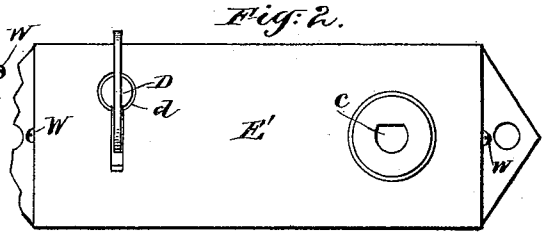


Fig. 7.

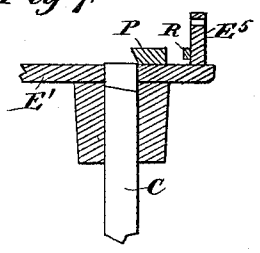


Fig. 4.

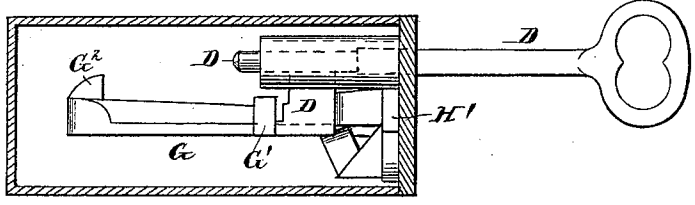


Fig. 5.

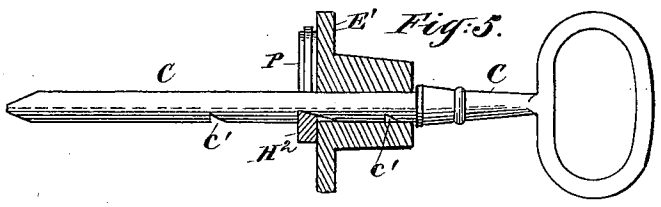
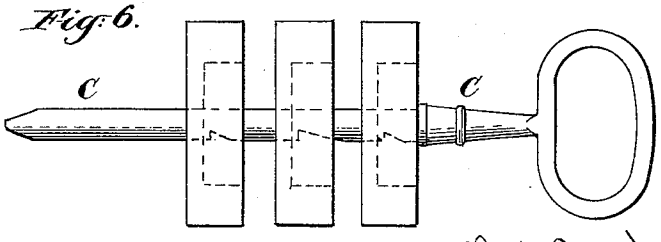


Fig. 6.



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LOCK.

SPECIFICATION forming part of Letters Patent No. 518,211, dated April 10, 1894.

Application filed February 15, 1893. Serial No. 462,394. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. JOHNSON, a citizen of the United States, residing at Brooklyn, in the county of Kings, in the State of New York, have invented a certain new and useful Improvement in Locks, of which the following is a specification.

My improvement applies to that class of locks of which a good example is described in the patent of Peter Zimmermann, Jr., dated August 9, 1892, No. 480,359. The locks of this class are intended not to directly secure a door, a drawer or a lock, but to retain alternately a key and pin in order to insure that certain acts are performed, as the fastening of windows, and the closing of water and gas-cocks. There is the ordinary key which secures the main door of the building or apartment, and there is a pin separate therefrom but which serves an important purpose in relation thereto by receiving several portable sub-locks which secure the gas-cocks, windows, &c.

My lock is a holder for the key and the pin, holding the key during the day and the pin during the night. The key of the building or apartment being retained in my lock during the day is released only by the introduction of the pin after the several locking devices have been properly placed on the several window fastenings, water-cocks, &c., so that the pin is empty and can be thrust in the proper hole in my lock. After opening the place the next morning, the main door-key is introduced into my lock, and by such act the pin is liberated and can be then used to successively liberate and retain on itself the several locking devices or sub-locks. When the pin is thus loaded with the sub-locks, it is hung up or otherwise disposed of in any convenient manner until it becomes time to again secure the parts, when it is taken down and the several sub-locks which have been strung thereon are again placed on the several window fastenings, water-cocks, &c., and the empty pin is again thrust into my lock, and the act of so thrusting in the empty pin again liberates the main key and the round of operations is repeated.

Locks of this class are intended to serve mainly as reminders to avoid any accidental or unintentional leaving of a portion of the windows, water-cocks, gas-cocks, &c., unsecured. But my device contributes further to make it impossible with ordinary skill to intentionally avoid the performance of these duties. The several sub-locks and the provisions for holding them in their several places until the proper pin is inserted are fully set forth in the patent to Zimmermann referred to, and need not be here specifically described. In the place of the single rocking lever of the Zimmermann lock, I employ two levers, one, which I term the principal or main lever, receiving the thrust of the key and of the pin alternately, and being rocked thereby, and the other, which I term the auxiliary lever, moving in a plane at right angles to the motion of the main lever and operated thereby. My main lever receives the force of the key and the pin. My auxiliary lever alternately locks the key and the pin, the movement in one direction locking the pin and liberating the key, and the movement in the opposite direction locking the key and liberating the pin. My auxiliary lever has the quality in addition to its securing the key that it covers the vacant space in the key-hole, and prevents the insertion of any device to fraudulently operate the lever. I provide a dog for holding the auxiliary lever in the position to retain the key until the proper pin is inserted. This dog is operated in the direction to release it by the insertion of the pin. It is operated in the other direction by a constant force, as a weight or spring. My auxiliary lever of itself independent of the dog is superior to the transverse slide in the said Zimmermann patent because of its greater efficiency. It can utilize one of the notches which are required in the pin to hold the sub locks and make such notch a means for strongly engaging by its swinging movement. The movement of the secondary or auxiliary lever may be much greater than the slide of the Zimmermann lock and there may be any required amount of lost motion allowing the pin to be put in nearly to its full extent before the auxiliary lever commences to move and then to be moved efficiently. It avoids

the weakening of the pin or the key which was required by the mortising to receive the slide.

The accompanying drawings form a part of this specification and represent what I consider the best means of carrying out the invention.

Figure 1 is a horizontal section of the casing and a plan view of the mechanism. The door-key is inserted and the pin is absent. Dotted lines show the position of the parts when the opposite conditions obtain. Fig. 2 is a front view. Fig. 3 is an elevation of the mechanism from the rear, with a portion broken away. Fig. 4 is a vertical section on the line 4—4 in Fig. 1. Fig. 5 shows the pin in place in the lock, with a vertical section of the adjacent parts of the lock. Fig. 6 is a similar view of the pin removed from the lock and carrying three sub-locks, the condition which obtains during the day. Fig. 7 is a horizontal section of a portion of the lock with a plan view of the end of the pin in the act of being inserted.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

I employ a number of sub-locks adapted to secure windows, water-cocks, &c., not shown, and having so little thickness that a number can be strung upon a single pin. C is such pin, equipped with a series of notches c', each serving to retain one of the sub-locks when the latter are strung thereon, and to hold such during the day while the apartment is occupied, and the several windows, water-cocks, gas-cocks, &c., are in use.

D is the main door-key, which may be of any ordinary size and form, and adapted to operate a lock on the main door.

E is the casing of my lock or holder, set in any conveniently accessible position. Its front is a removable cover plate E′, having holes c and d adapted to receive respectively the pin and the key. The interior of my casing contains mechanism which will release only one at a time. Each is released only by the insertion of the other. My invention pertains to this internal mechanism, and gives greater certainty of this result.

G is what I term the principal or main lever, certain portions of which will be designated, when necessary, by super-numerals, as G′. This lever turns on a pivot F set in a lug E^2 in a removable cover E′ of the fixed casing E. An arm G′ is presented to receive the thrust of the key D, and thereby to turn the lever in one direction, to the right. Another arm, G^2, is presented in the position to receive the thrust of the pin C, and thereby to turn the lever in the opposite direction, to the left. The arm G^2 is so formed, and its working end lies so far back in the casing, that a considerable length of the pin C is required to reach it, thus affording a sufficient length of pin, so that when the pin is withdrawn and put to use it can receive all the sub-locks pertaining to the different parts of the building.

H is what I term the auxiliary lever. It is mounted on a fixed pivot E^3 set in the casing, and turns in a plane at right angles to that of the motion of the main lever G. This lever is conveniently placed just inside of the cover E′, and in a parallel plane thereto, at right angles to the motion of the key and pin so that it can serve as an efficient means of locking them by engaging under any offset in either, its ends H′ and H^2 being presented alternately to the key and pin.

G^3 and G^4 are short arms having beveled faces which are so presented to corresponding beveled faces H^3 H^4 that the turning of the lever G in one direction and the other will by the action of these beveled faces induce a corresponding turning of the lever H alternately in one direction and the other, to induce such presentation of the ends and effect the alternate locking and liberation of the key and pin.

P is a dog turning on a pivot Q set in the cover plate E′, and subject to the gentle force of a spring R which abuts against one of the lugs E^5, E^5, by which lugs and screws W the cover E′ is held to the main casing E. This dog is arranged to engage the end of the auxiliary lever H and hold it firmly in the position to retain the key D. In such position it partially covers the hole c through which the pin C is inserted. The adjacent face of the dog P is beveled. When the pin C is inserted, it finds its path partially obstructed by the dog P, and acting against its beveled edge thrusts it aside sufficiently to allow the pin to pass. This act of thrusting the dog aside liberates the auxiliary lever so that when the pin C near the completion of its thrusting movement strikes the arm G^3 and exerts a force tending to turn the lever G, the beveled face of its arm G^4 acts against the beveled face H^4 and causes the auxiliary lever to turn in the direction to liberate the key D, and by the engagement of the end H^2 in a notch in the pin C to retain such pin. This condition obtains during the night, while the key is away and the pin is retained. When in the morning the attendant returns and unlocks the main door, not shown, and introduces the key D into the key-hole, the reverse of the previous operations takes place; that is to say, the key D being introduced in its proper hole in my lock finds an unobstructed admission and striking with its wing against the arm G′ turns the main lever G to the right. There must be sufficient lost motion to allow this movement to progress so far before the arm G^2 strikes the end of the pin C that the auxiliary lever H will be sufficiently turned to liberate the pin. Now the farther thrusting in of the key commences to push out the pin, and on the attendant completely withdrawing the pin the dog P snaps into place and holds the auxiliary lever H and the main lever G reliably in the "day"

position. In this position the end H′ of the auxiliary lever is presented in the path of the wing of the key and prevents the key from being withdrawn. The attendant having withdrawn the pin proceeds to liberate the several sub-locks and to hold such sub-locks on the pin. My lock is not again disturbed but simply retains the key D until evening; then the attendant having replaced the several sub-locks in their respective positions comes again with the empty pin C and thrusts it into the hole *c*. One of the first effects of the thrusting movement of the pin C into the hole *c* is to act on the beveled edge of the dog P and turn this dog against the force of the spring Q so as to liberate the auxiliary lever H. Next, he thrusts the pin without further obstruction nearly its whole length into the casing E. Now its end strikes the arm G^2 and acting thereon turns the lever G, and by the action of its beveled arm G^4 on the beveled arm H^4 turns the lever H so as to engage the end H^2 in a notch in the pin C and retain the pin. The same movement of the lever causes the end H′ to liberate the key D, and now the attendant withdraws the key D and proceeds to lock the main door, not shown. In the morning the several operations are repeated.

The presentation of the end H′ of the auxiliary lever across a large portion of the key-hole *d*, not only prevents the withdrawal of the key by engaging with its wing, but also by covering and closing nearly all of the key-hole except that portion which is occupied by the shank of the key obstructs any picking of the lock by wires or the like. The dog P performs an important function in preventing the auxiliary lever H from being turned by any force thus applied. The key D cannot be removed until the dog P has been properly turned, and this cannot be effected except by operating through the hole *c* with the pin C or with some device which is a closer imitation thereof than will be likely to be attained by ordinary skill.

The auxiliary lever may have any required thickness and strength and it lies very favorably to resist strains. There is ample room in the space between the pin and key for the beveled faces.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. I can vary the forms of the parts within wide limits. The thickness of the dog P may be increased, and the bevel of the edge may be thereby presented more favorably to the action of the pin.

I claim as my invention—

1. In a lock having a key-hole *d* and a pin-hole *c* adapted to receive a pin and key respectively, the lever G′, G^2, having beveled faces G^3, G^4, and the auxiliary lever H′, H^2, having beveled arms H^3, H^4, the latter lever turning on a pivot E^3 and adapted to engage by an oscillating movement with the pin and key alternately, the parts being arranged as shown so as to induce such movement by the beveled faces G^3, G^4, acting obliquely on the beveled arms H^3, H^4, all combined for joint operation, substantially as herein specified.

2. In combination with the cover plate E′, having the two apertures *d* and *c* adapted to receive respectively the key and pin, the lever G turning on the pivot F and operated alternately by the key and pin, and the dog P and spring R arranged as shown, adapted to engage with the lever H and to be liberated by the thrusting in of the pin C, substantially as herein specified.

In testimony that I claim the invention above set forth I affix my signature in presence of two witnesses.

CHAS. T. JOHNSON.

Witnesses:
M. F. BOYLE,
H. A. JOHNSTONE.