F. C. Goffin,

Lock.

No. 10,660. Patented Mar. 21, 1854.

Fig. 2

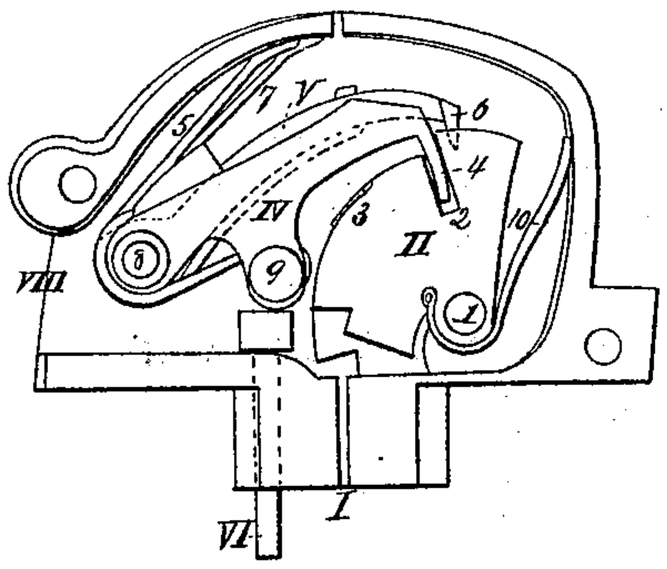


Fig. 1

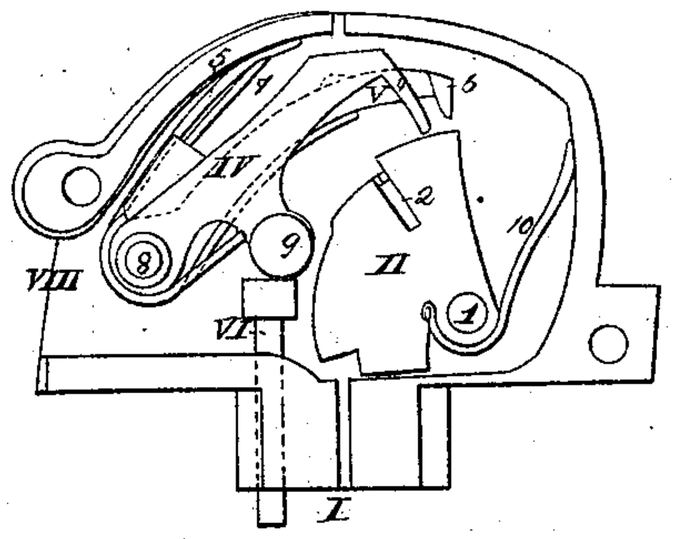


Fig. 4.

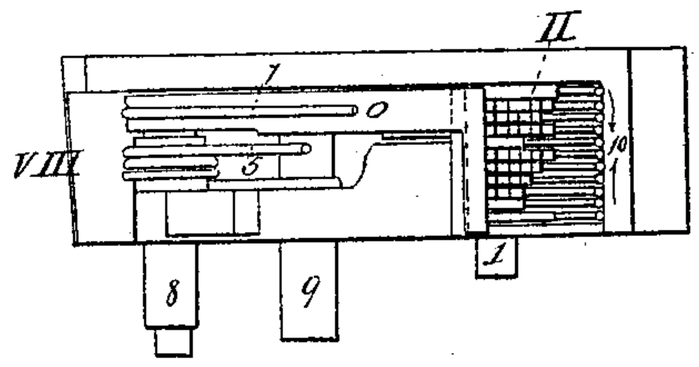


Fig. 5

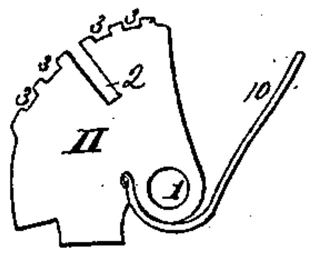


Fig. 6

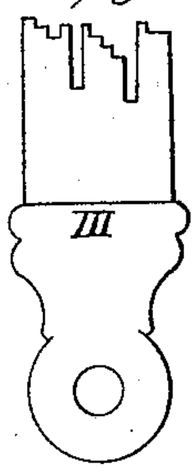
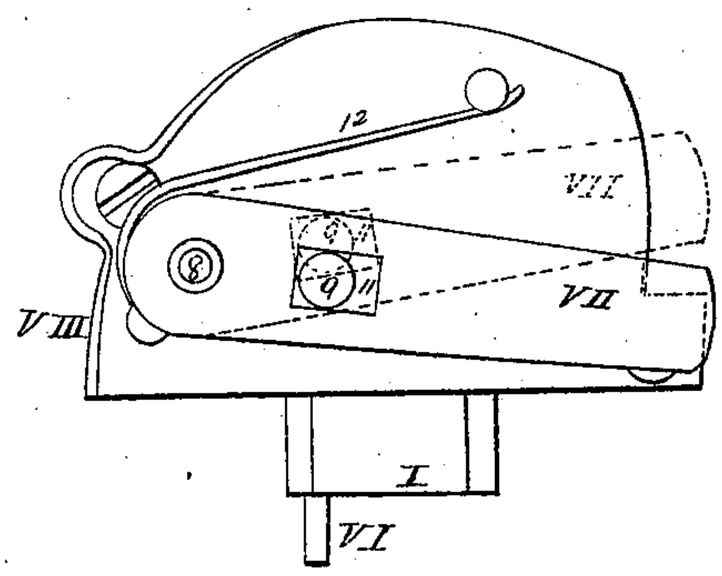


Fig. 3.



UNITED STATES PATENT OFFICE.

F. C. GOFFIN, OF NEW YORK, N. Y., ASSIGNOR TO A. B. ELY.

SAFE-LOCK.

Specification of Letters Patent No. 10,660, dated March 21, 1854.

To all whom it may concern:

Be it known that I, F. C. GOFFIN, of the city, county, and State of New York, have invented new and useful Improvements in Locks; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a side view of the lock with the side plate and bolt holder removed, and the slot holder and notch holder disengaged from the sectors. Fig. 2 is a similar view with the slot and notch holders engaged with the sectors. Fig. 3 is an outside side view showing the two positions of the bolt holder. Fig. 4 is a rear view of the lock with the back part of the outside shell removed. Fig. 5 is a view of one of the notched sectors. Fig. 6 is a view of the key.

Similar marks of reference refer to similar parts in all the figures.

The object of my invention is to produce a lock that is cheap and simple and that cannot be picked by any known process. And I accomplish this, first, by so constructing the parts that their relative positions cannot be ascertained from without by the sense of feeling; second, by so combining and arranging them that access cannot be had to them by drilling; and third, by so making the outer shell as to prevent the introduction of powder and the retention thereof if introduced.

Locks are ordinarily picked either first by pressing back the bolt or its stump against the tumblers and then moving the tumblers up and down till the absence of any resistance indicates to the fine touch the position of the recess made to receive the stump; or second, by drilling into the side of the lock from the front of the door and then by the use of proper instruments bringing the recesses of the tumblers into a line so as to shoot back the bolt; or third, by filing the bolt so that when unlocked the key will turn and spring the tumblers without entirely springing the bolt; or fourth, by introducing powder sufficient to blow up the lock and release its fastenings.

My lock presents an effectual barrier to each and all of the above methods, while in many, if not all cases, if it be tampered with it will indicate the fact to the next party who may have occasion to use the key.

To enable others skilled in the art to make and use my invention I will proceed to describe its construction and operation.

I is the key hole through which the key, Fig. 6, is inserted into the lock. It runs horizontally across the front of the lock and is only large enough to admit the key which is made of sheet steel, while it is of such form and size that no powder or foreign substance can be introduced through it into the lock. The projecting part through which the key hole passes is that which comes out through the outer plate of the door to the front surface thereof.

II, is a series or gang of sectors of any desired number more than two which revolve on a common axis (1) placed horizontally and parallel with the key hole and front of the door, and which are pushed backward and upward by the direct pressure of the key, each of the wards or irregularities of which bears against a sector. In each of the sectors, but at different relative positions on their several peripheries corresponding with the different lengths of the wards or slots of the key is a deep slot (2) of uniform size. When the key is thrust into the key hole up to its shoulder, III, Fig. 6, the several sectors will be pushed upward in different degrees; but the slots of all will then be in one line parallel with their common axis. The peripheries of the two outside sectors, only one of which is shown, are smooth excepting the slots (2). The peripheries of the rest are notched as in (3) Fig. 5. The two smooth sectors may be varied in position and the number increased; but I deem this number and position the best. The notched sectors and the lower parts of the others are of a uniform radius, while those parts of the smooth sectors which are above their slots are of a greater radius than the rest, and project out beyond the other sectors. The object of this will presently appear.

IV, is a stout arm or slot holder with a bent finger or catch (4) and a spring (5). The catch extends across the whole of the sectors and engages with all the slots thereof. V, is another arm or notch holder with a bent finger or catch (6) and a spring (7). This catch extends only to the sectors that are notched and engages with the notches thereof. The arms IV and V turn upon a common axis (8), the arm V when they are disengaged or thrown back resting against a portion of the catch (4) which passes

across and beneath it between it and the sectors, or against a pin (9) projecting inward from the arm IV.

When the key is thrust into its shoulder, and the slots of all the sectors are brought into a line, the arm IV is thrown forward by its spring (5), and its catch (4) engages in all the slots and holds them in their position after the key is withdrawn. At the same time the arm V is thrown forward by its spring (7) and its catch (6) engages in the notches of the notched sectors above their slots.

VI is a push pin projecting through the front of the lock and made with a head on its inner end which strikes against the arm IV at the point (9). The head prevents its being drawn entirely out. By pressing this push pin against the arm IV that with the arm V is pushed back and disengaged from the sectors, which are then thrown down to their first position by the action of their springs (10).

VII, Fig. 3, is a stout arm or bolt holder placed on the outside of the shell of the lock. It is made of a stout piece of metal and moves on the axis (8). It also has a slot (11) into which the pin (9) which comes through a slot in the side plate is inserted. It is also furnished with a spring (12). When the slot holder is engaged with the sectors the bolt holder is thrown forward as in Fig. 3, and the bolts of the door are left free; and when the slot holder is disengaged from the sectors the bolt holder is thrown back into the position of the dotted lines Fig. 3, and the bolts are held fixed and the door is fast.

VIII is the bottom of the lock, and is left entirely open so that any powder or other foreign substance may fall out if once inserted therein, which however from the size and shape and position of the key hole cannot be easily done.

I will now proceed in general terms to describe the operation of my lock.

When the door is to be unfastened the key (which acts only on the sectors) is inserted into the key hole and pressed against the sectors till they engage as before mentioned with the slot holder, and the bolt holder is thrown forward. The bolts are then free. The key is then withdrawn and no more needed till the door is to be again unfastened. When the door is to be fastened the push pin is pressed against the slot holder (on which only it acts) until it is disengaged from the sectors and the bolt holder is thrown back. The door bolts are then fast. When the push pin is protruded the door is unfastened, and when it is pushed in the door is fast. It thus becomes an index of the state of the door whether fast or not.

The object of having one or more of the sectors with a smooth periphery and greater radius is this. When the slot holder is disengaged, its catch rests against the smooth and projecting sectors, and neither its catch nor that of the notch holder can touch either of the other sectors. If then the other and notched sectors are raised by any instrument they will move freely up and down, and will thus afford no possible indication as to the position of their slots, either as regards each other or the catch of the slot holder. If the smooth sectors (and it must be all of either to allow the catch to move at all) be raised by any false key or other instrument so that their slots shall be in a position to receive the catch of the slot holder, the catch will engage or slip in only as far as the surface of the notched sectors, and will there rest. In this position the catch of the notch holder will be brought down so as to engage with some of the notches of one or more of these sectors and hold them fast in such a manner as to render it impossible to ascertain the relative positions of the slots and catch by any known method. At the same time the position in which the several sectors will then be held will be such and so irregular that the true key cannot be made to operate to raise them again until after they shall have been restored to their proper position by being entirely disengaged from the catches. In this case any tampering with the lock will be made manifest to any one who may first subsequently have occasion to unlock the door by means of the true key. Another object of the smooth projecting sectors is this: Being smooth and projecting the key can be used and the sectors raised to the engaging position while the catch of the slot holder is resting upon them. If it were not so, the catch would fall into some of the notches of some of the sectors, and the key could not be used, nor the sectors raised to the proper position, unless meanwhile the slot holder and its catch were kept pushed back clear of contact with them by a constant use of the push pin.

In other locks the side of the lock is presented to the surface of the door so that by drilling through the door plate, &c., the tumblers and bolt can be got at and their relative position ascertained so far as to raise the tumblers and throw back the bolt with ease. This cannot be done with my lock. The combination and arrangement of the parts is such that the sectors are made to vibrate lengthwise between the key hole or surface of the door and the slot holder in such manner that, in the first place, the slot and catch cannot be reached without piercing through the entire body of the lock lengthwise; and in the second place, when reached they cannot be brought to and held in the proper relative positions to allow of

their engaging with each other. In other locks not unfrequently by introducing a file the bolt can be so filed away as that when subsequently thrown forward by the key it will not entirely lock, but will be left with its stump in the recesses of the tumblers so that it can be readily pushed back with a wire or other instrument. My lock on the contrary is so constructed and arranged that no file can be introduced or operated in any such manner or for any such purpose.

As to the application of powder to obtain access to a safe, the size and shape of my key hole with its depth will prevent the introduction of powder to any injurious amount, while the open bottom of the lock will prevent its being retained if once introduced. Other locks called powder proof have been constructed, in some of which the key hole has been so protected that no powder could be introduced through it into the lock and in others holes or outlets have been made directly underneath the key hole to allow the powder that might be introduced through the key hole to fall through; but in each of these cases, spaces or chambers have still been left in the locks either when the bolts were out or in, that is when locked or unlocked or both, of such situation as to be easily reached from the outside by drilling, and of such size as when reached to receive and retain powder enough to explode and render the lock entirely useless against the attacks of the burglar. This is not the case with my lock. The arrangement and construction of the parts as connected with the outer shell is such that the whole interior cavity is at all times equally filled with the operating parts of the lock, and there is at no time whether locked or unlocked any chamber or space within that will receive or retain any powder if it can be reached by drilling or otherwise.

In all other locks the bolt of the lock is inside of the shell and is moved in and out by the operation of the key or knob. In my lock the bolt or bolt holder is on the outside of the shell as above described which I deem a material improvement.

Having thus fully described my invention, what I claim as such, and desire to secure by Letters Patent, is—

1. The arrangement of the sectors in such manner that a part of the number shall have the portions above the slots of a radius greater than the rest, so as to project beyond the other sectors, and with smooth peripheries, substantially in the manner and for the purpose set forth.

2. The arrangement of slot holder and notch holder with the sectors by which, while the former engages with all the sectors, the latter engages with those only that have not a smooth periphery substantially as described.

3. The arrangement of the slot holder or slot and notch holder and their catches with the slotted or slotted and notched sectors in relation to the key hole substantially as described.

F. C. GOFFIN.

Witnesses:
W. N. ELY,
M. S. BREWSTER.