E. M. & J. E. Mix,

Padlock.

No. 33,920. Patented Dec. 10, 1861.

Fig. 2.

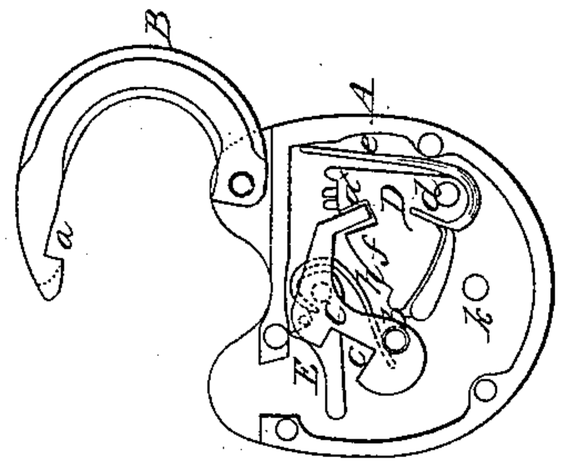


Fig. 4.

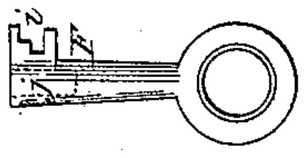


Fig. 1.

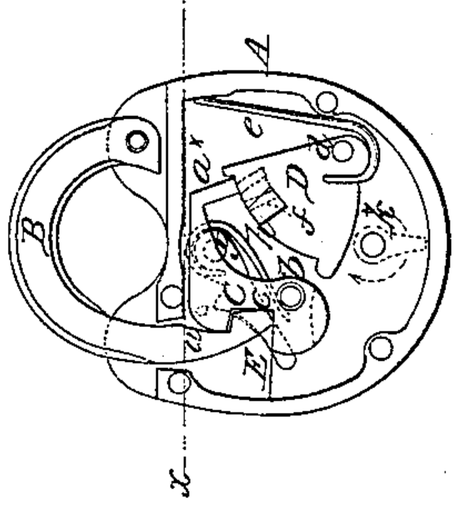
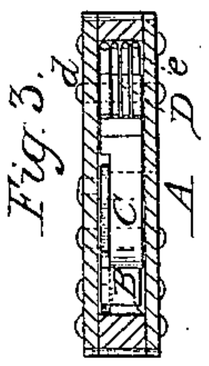


Fig. 3.



Witnesses.
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UNITED STATES PATENT OFFICE.

E. M. MIX AND J. E. MIX, OF ITHACA, NEW YORK, ASSIGNORS TO THEMSELVES AND JOHN GAUNTLETT, OF SAME PLACE.

IMPROVEMENT IN PADLOCKS.

Specification forming part of Letters Patent No. **33,920**, dated December 10, 1861.

To all whom it may concern:

Be it known that we, E. M. MIX and J. E. MIX, both of Ithaca, in the county of Tompkins and State of New York, have invented a new and Improved Padlock; and we 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 an internal view of a padlock constructed according to our invention and showing the lock in a locked state; Fig. 2, an internal view of the same, showing the lock in an unlocked state; Fig. 3, a section of the same, taken in the line *x x* of Fig. 1; and Fig. 4 a detached view of the key of the same.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to obtain a padlock which may be opened or unlocked by turning the key in either direction, and one which will admit of a false key being turned entirely around within it in either direction without unlocking the lock and without injuring the parts thereof. This object being attained, the lock cannot be easily picked nor forced open. To this end we employ a series of slotted sector-tumblers arranged in relation with the key-hole of the lock and a dog, as hereinafter described.

To enable those skilled in the art to fully understand and construct our invention, we will proceed to describe it.

A represents the case of the padlock, which may be of ordinary construction and provided with the usual shackle B. The end of the shackle, which passes in and out of the case A, has a notch *a* made in it, into which a dog C catches when the lock is in a locked state. (See Fig. 1.) The dog C works on a pin *b*, and it is provided with a rectangular notch *c*, which receives the end of the shackle below its notch *a* when the lock is in a locked state. The back end $a^{\times}$ of the dog is bent downward, and is in contact with the edges of a series of tumblers D when the lock is locked. The tumblers D are of sector form, and are placed on a common center pin *d*, on which they all work loosely. Each tumbler is provided with a spring *e*, and a radial slot *f* is made in each tumbler D, the slots of the several tumblers not coinciding with each other—that is to say, they are cut into the several tumblers at different points—so that the tumblers will require to be moved at varying distances, in order that the several slots *f* may be brought in line with each other.

To the back plate of the case A, behind the dog C, there is attached by a pivot *g* an arm E, which has a spring *h* acting against it, said spring having a tendency to throw up the free or disengaged end of arm E, the opposite end being secured in position by the pivot *g* just alluded to. This arm E bears against the end of shackle B when the latter is secured in the lock, as shown in Fig. 1.

F is the key of the lock, which is provided with bits *i* of varying lengths, corresponding to the varying positions of the slots *f* in the tumblers D. The tube or barrel *j* of the key when inserted in the lock fits on a guide-pin *k*, and the bits *i* act against the lower sides of the tumblers and move the same, so that their slots *f* will come in line and allow the end $a^{\times}$ of the dog to pass into the slots *f*. The dog C is acted upon by the arm E, the spring *h* of which causes it to throw up the shackle B, which in rising moves the dog in consequence of the end of the shackle fitting in the notch *c* of the dog. The tumblers D are placed in such relation with the pin *k*, and the lower sides of the tumblers are of such form, that the bits of the key may act upon them when turned in either direction, as indicated by the arrows in Fig. 1, and it will be seen that if a false key is inserted in the lock the key may be turned entirely around in either direction without unlocking the lock, for the slots *f* cannot be brought in line with a false key, and consequently the shackle cannot be released from the dog. This turning of the key in either direction is an important feature, for it prevents the internal or working parts of the lock being injured by forcibly turning a key in the wrong direction, and this is frequently resorted to by burglars in order to open the lock. It also prevents a burglar or lock-picker obtaining, by turning a false key or dummy, a knowledge of the lock—that is to say, of the position of the slots in the tumblers—for the purpose of making a key to fit the lock. The shackle, it will be seen, is engaged or locked in the lock by simply pressing it down, so that its end will pass into

notch *c* and force down the front end of dog C, so that its back end $a^{\times}$ may pass out of the slots *f* and rest thereon, the springs *e* throwing the tumblers D into their former position when the end $a^{\times}$ of the dog leaves the slots.

We are aware that slotted sector-tumblers have been previously used, and also that dogs have been employed in connection with shackles. We therefore do not claim, broadly, such devices, separately or in themselves considered; but

We do claim as new and desire to secure by Letters Patent—

The arrangement of the sector-tumblers D, guide-pin *k* of the key F, and the dog C, substantially as shown and described, for the purpose of admitting the key F to be turned in either direction to unlock the lock, and also to prevent the internal parts of the lock being injured by the insertion of false keys, as set forth.

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