

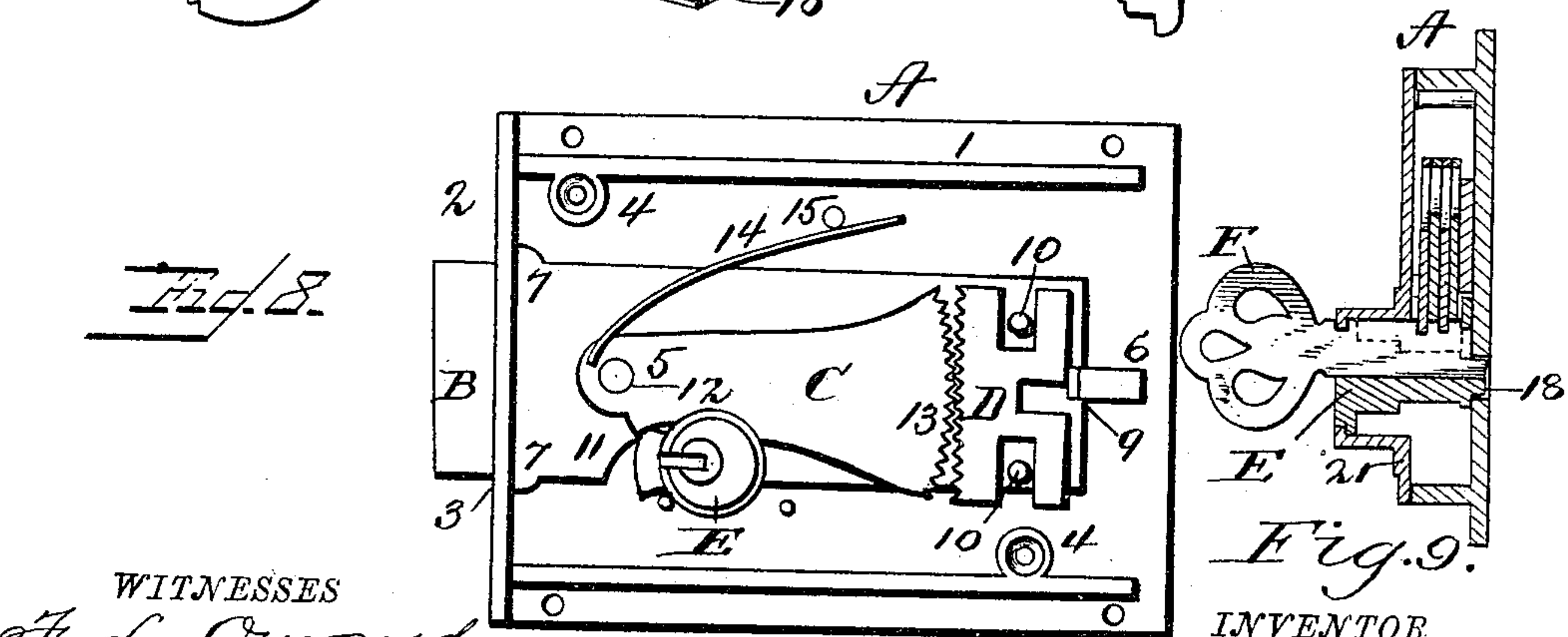
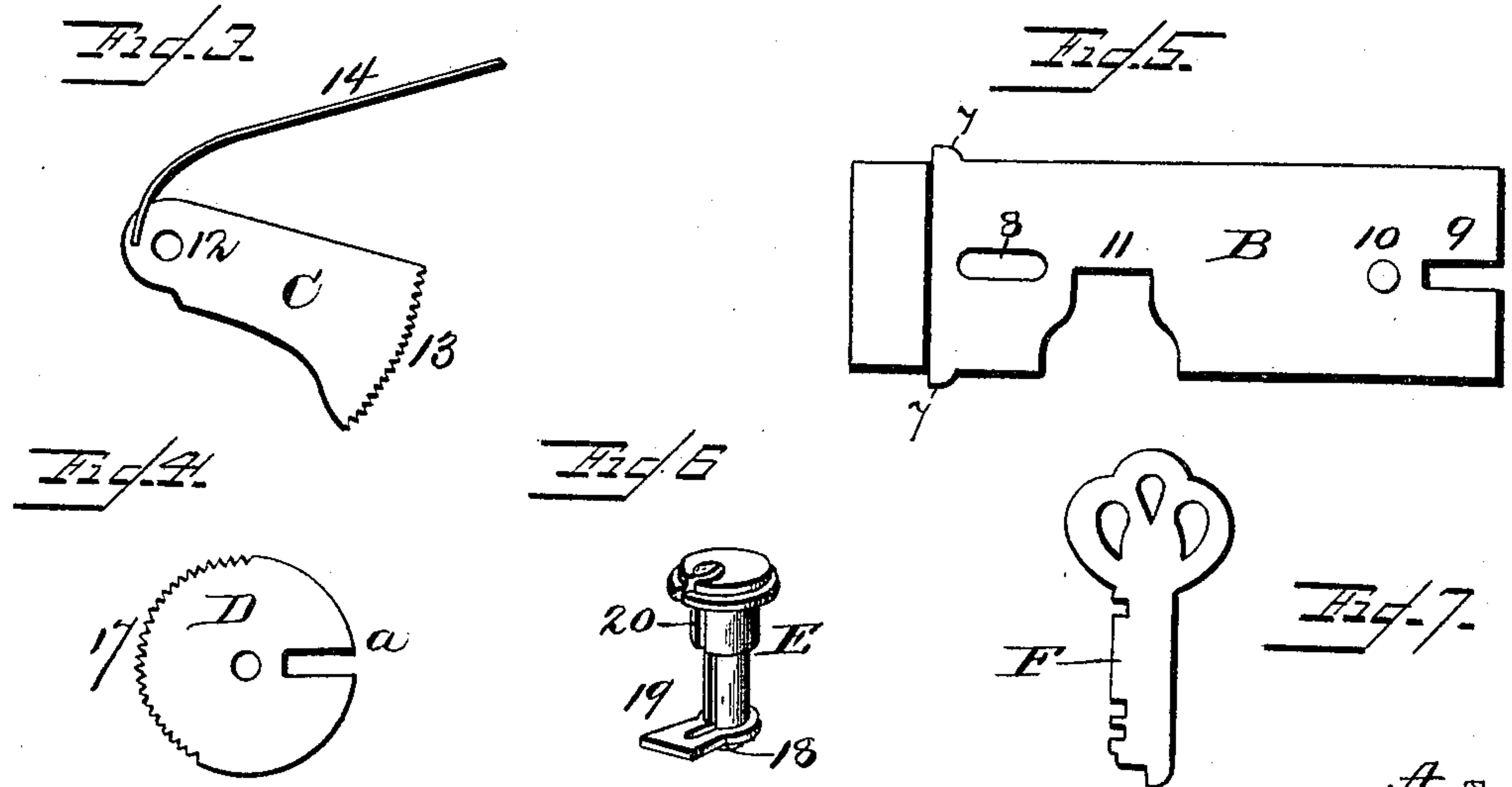
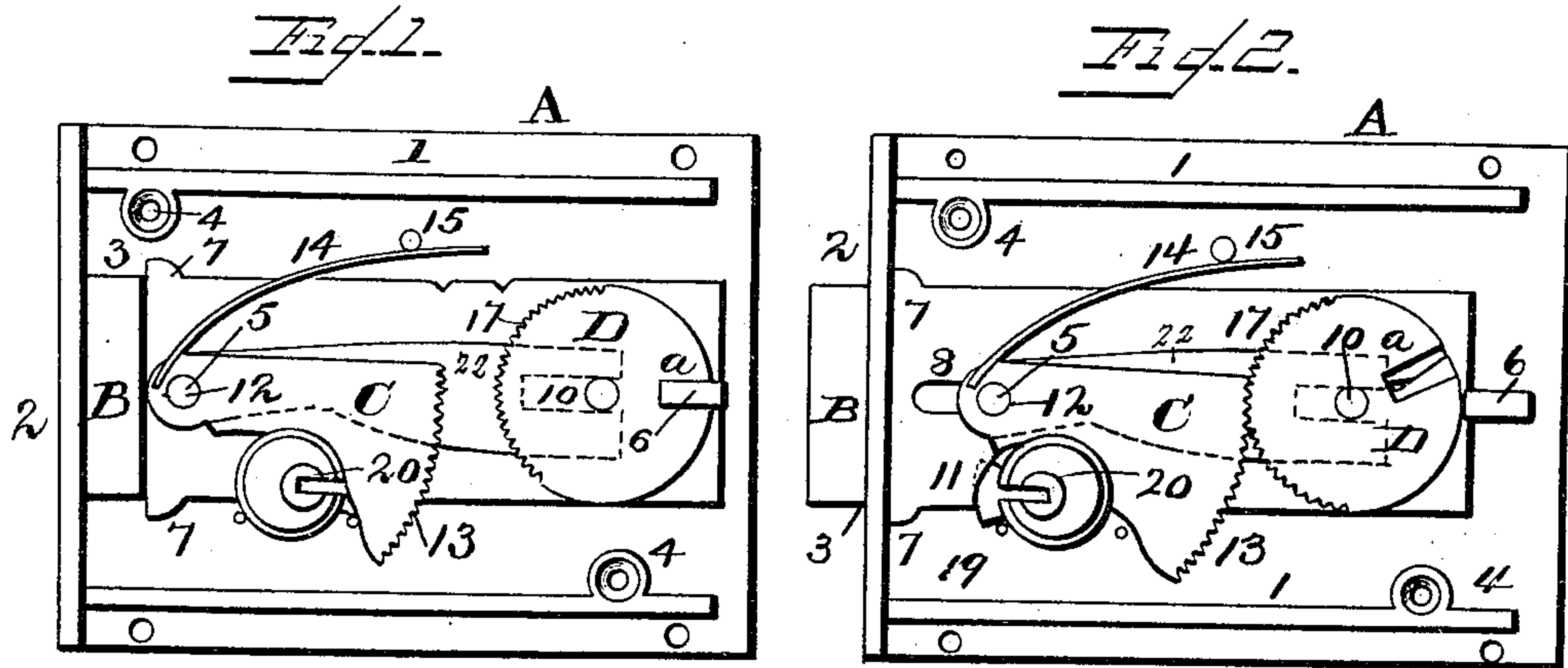
(Model.)

W. D. DOREMUS.

LOCK.

No. 370,183.

Patented Sept. 20, 1887.



WITNESSES
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LOCK.

SPECIFICATION forming part of Letters Patent No. 370,183, dated September 20, 1887.

Application filed August 12, 1887. Serial No. 246,769. (Model.)

To all whom it may concern:

Be it known that I, WILLARD D. DOREMUS, a citizen of the United States of America, residing at the city of Washington, in the District of Columbia, have invented a new and useful Lock, of which the following is a specification.

My invention has relation to improvements in locks of that class wherein the movements of the locking-bolt are dependent upon and controlled by the differential relations and positions of the tumblers.

The object of my invention is to provide a simple and effective locking means which may be locked by any key adapted to lift the tumblers, but which, being locked by a selected key, cannot be unlocked except by the same key or its duplicate.

The invention is hereinafter fully described, and the novelty thereof is specially pointed out in the claims hereto.

I have also fully illustrated my invention in the accompanying drawings, forming a part hereof, wherein—

Figure 1 is a plan view of the lock with one side of the casing removed, showing the parts assembled and in an unlocked position. Fig. 2 is a similar view showing it in locked position. Fig. 3 is a view of one of the tumblers. Fig. 4 is a view of one of the locking-plates. Fig. 5 is a view of the bolt. Fig. 6 is the key stem or spindle. Fig. 7 is a view of a key. Fig. 8 is a plan view of a lock with one side of the casing removed, showing a modified form of the locking-plate; and Fig. 9 is a transverse section of the lock, taken through the key-spindle.

Reference being had to the drawings, A designates the casing, consisting of two plates united by a rim-piece, 12, in the latter of which is formed a way, 3, for the bolt. The removable cover or plate is secured by screws taking hold in threaded holes 4. In the casing is fixed a pin, 5, on which the tumblers are pivotally supported, substantially as shown, and in the rear of the casing is a guide-stump, 6, to hold up the rear end of the bolt, and also to hold the locking-plates in position when the bolt is drawn back.

B designates the bolt, having projecting shoulders 7 to prevent its being moved out

too far. It also has a slot, 8, to take the pin 5, and an open-end slot, 9, in its end to engage the stump 6 in the casing. On the bolt is a pin, 10, on which the locking-plates are arranged and move as a bearing. A key-recess, 11, is formed in the side of the bolt, within which the arm of the key-spindle rotates to move the bolt.

C designates the tumblers, substantially of the form seen in the drawings. They are provided with bearing-holes 12 to take a pin, as 5, and have curved outer ends formed with teeth or notches 13 to engage with the teeth on the locking-plates, as hereinafter specified. Each tumbler is provided with a spring, 14, carried forward and arranged to set with its free end against a pin, 15, in the casing. The force of the spring on its connected tumbler carries the tumbler down after being lifted by the key.

D designates the locking-plates, mounted on pins 10 on the bolt, as stated, and formed with open-end slots *a* to engage the stump 6 in the casing. The edge of each locking-plate on the side next to the ends of the tumblers is formed with teeth or notches 17 to engage with the teeth of the tumblers, as hereinafter specified.

E designates the key-spindle, having a pivot end, 18, fitted in a bearing in the casing and provided with an arm, 19, to engage the recess 11 and move the bolt. The key-spindle is slotted, as at 20, to take the key, as usual. A barrel or casing, 21, is fixed in the plate of the casing and has keyways on opposite sides, which register with the key when inserted.

F designates the key, which is formed with as many steps as there are tumblers in the lock.

There may be as many tumblers as desired, the principle or mode of operation of the lock being adapted to one or more.

The parts are assembled as follows: The bolt is arranged in the casing in an unlocked position, with the stump and tumbler-pin in their respective slots. The key-spindle is then placed in position. The tumblers are then put in. Then the locking-plates with their slots straddle the stump, and then the cover-plate is put on and screwed down. The parts are now in the position seen in Fig. 1 of the drawings. A key is now selected having wards or steps of any arrangement and of different

depths, and on being inserted and turned the bolt may be shot forward in locked position, as seen in Fig. 2 of drawings.

In Fig. 8 of the drawings is shown a modified form of locking-plates, consisting of a sliding plate having its inner edge formed with teeth to engage the teeth of the tumblers.

The operation may be stated as follows: The key being inserted and turned, the tumblers are lifted to different heights, and when at their limit the locking-plates are brought into engagement with their respective tumblers and the slots withdrawn from the stump at the end of bolt. The key being further rotated, the tumblers are pressed down by the springs, carrying with them the respective locking-plates, each being moved a different distance, and throwing the open-end slots out of alignment with each other and so as not to register with the stump, so that the edge of the locking plate or plates abuts against the edge of the stump, and thus holds the bolt in locked position. It will be perceived that the bolt cannot be retracted until the slots of the locking-plates are again brought in alignment with the stump, and that this cannot be done except by a key having the same steps as that which moved the bolt into locked position. After the bolt has been unlocked any key with any depth of steps may be used to lock it; but having been locked, then that special key is alone applicable to effect the reverse operation.

My improvements are especially applicable to instances where locks are used on boxes or drawers, as in post-offices, where keys are often lost or not returned when the term expires or the right to use the box is hired to another. With my lock in such uses it does not lessen the security at all if the special keys be never returned, as all that is necessary is to take the lock off, open it, reassemble the parts in unlocked position, select any key, and lock it.

Between each tumbler, and extended rearward to set with its end between the locking-plates, may be inserted a thin metal plate, 22. These plates separate the tumblers and locking-plates and serve to preserve the engagement of the tumblers with their respective locking-plates. The plates 22 are held in position by means of an aperture fitted over the pin 5 and a slot at the end sliding over the pin 10, substantially as seen in Figs. 1 and 2 of the drawings.

What I claim is—

1. The combination, with the casing of a lock having a stump, 6, the bolt formed with a slot to engage the stump, and a key, of a spring-actuated tumbler fulcrumed in the casing and provided with teeth on its free end, and a locking-plate movably mounted on the

bolt and having a slot to engage the stump in the casing, and formed with teeth to engage the teeth on the end of the tumbler and be thrown out of alignment with the stump by the movement of the tumbler, substantially as specified.

2. The combination, with a lock-casing and its bolt, provided with a locking-plate mounted thereon, of a pivotally-supported and spring-actuated tumbler formed with teeth on its free end, the locking-plate having teeth to engage the teeth of the tumbler and adapted to be reciprocated into and out of engagement with the tumbler by the movement of the bolt, and be moved from and to its normal position on the bolt by the movements of the tumbler after engagement therewith, substantially as described.

3. The combination of the casing A, provided with a tumbler-pin, 5, and stump 6, the bolt B, arranged within the casing and formed with a slot, 8, to take the tumbler-pin and open-end slot to take the stump in the casing, the tumblers C, mounted on the pin 5 and provided with bearing-springs 14, and having teeth on their free ends, and the movable locking-plates D, mounted on the bolt and formed with teeth to engage the tumblers and slots to take the stump 6 of the casing, all arranged to operate substantially as described, and for the purposes stated.

4. In a lock, the combination, with a series of pivotally-supported and spring-actuated tumblers formed with teeth on their free ends, of a series of locking-plates mounted on the bolt of the lock to move therewith and formed with teeth to engage the teeth of the tumblers and be moved to and from their normal position by the movements of said tumblers, substantially as described.

5. The combination of the casing A, provided with a tumbler-pin, 5, and stump 6, the bolt B, arranged within the casing and formed with a slot, 8, to take the tumbler-pin and open-end slot to take the stump in the casing, the tumblers C, mounted on the pin 5 and provided with bearing-springs 14, and having teeth on their free ends, the locking-plates D, mounted on the bolt and formed with teeth to engage the teeth of the tumblers and with slots to engage the stump 6 of the casing, and separating-plates 22, arranged between the tumblers and the locking-plates, all substantially as described.

In witness whereof I have hereunto set my hand in the presence of two attesting witnesses.

WILLARD D. DOREMUS.

Attest:

H. A. ROBINSON,
JAS. W. TOWNER.