(Model.)

W. D. DOREMUS.

LOCK.

No. 374,179. Patented Dec. 6, 1887.

Fig. 1.

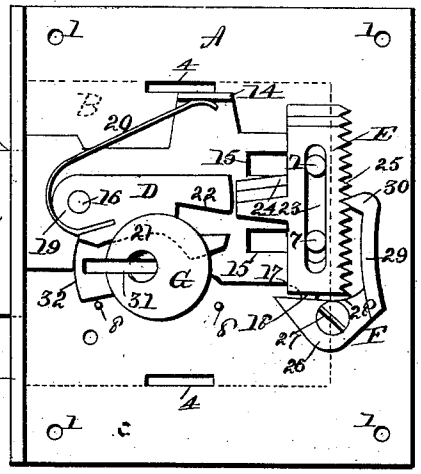


Fig. 2.

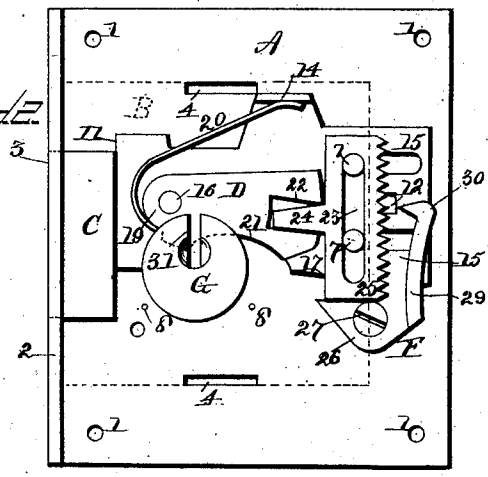


Fig. 3.

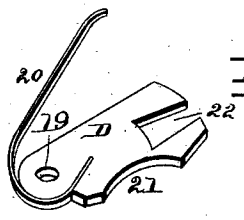


Fig. 4.

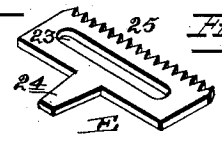


Fig. 5.

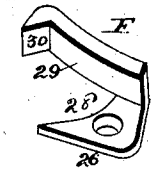


Fig. 6.

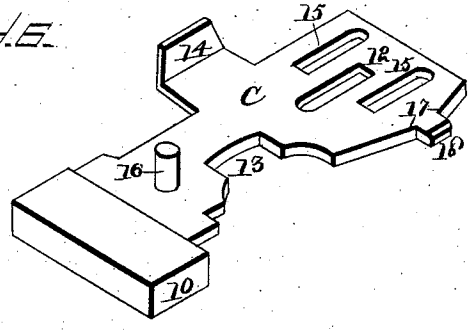


Fig. 7.

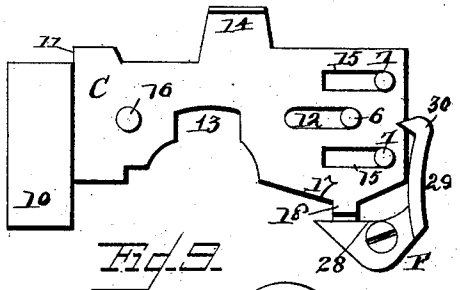


Fig. 8.

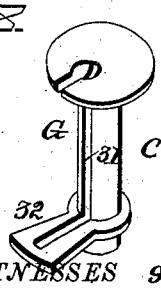


Fig. 10.

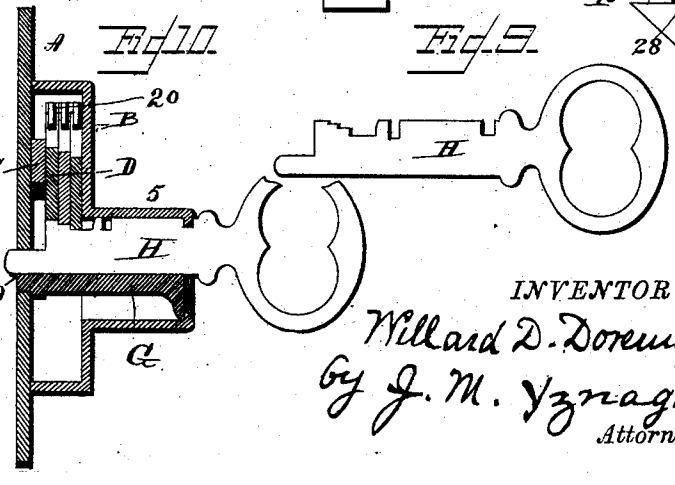


Fig. 9.

WITNESSES

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LOCK.

SPECIFICATION forming part of Letters Patent No. 374,179, dated December 6, 1887.

Application filed September 30, 1887. Serial No. 251,131. (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 Washington, in the District of Columbia, have invented certain new and useful Improvements in Locks; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in locks, and the object is to provide a door or desk lock which is simple in construction and efficient as a means for securing the devices to which it may be applied.

My invention consists in a novel construction of parts and their combination, as will be hereinafter fully described, and specially as pointed out in the claims.

I have fully illustrated my invention in the accompanying drawings, wherein—

Figure 1 is a plan view of the lock with the parts assembled and in a locked position, the casing being shown in dotted lines. Fig. 2 is a plan view showing the parts assembled and in unlocked position, the casing being shown as in Fig. 1. 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 locking-pawl. Fig. 6 is a view of the bolt. Fig. 7 is a view of the bolt and the locking-pawl as in locked position. Fig. 8 is a view of the key-spindle and arm. Fig. 9 is a view of a key. Fig. 10 is a transverse sectional view taken on a line centrally through the key-spindle.

Reference being had to the drawings, A designates the face-plate, and B the shield of the casing. The face-plate is provided with holes 1, through which screws or other suitable fastening means may be passed to secure it on the door or drawer, and formed with a flange, 2, on its front edge, in which is the usual bolt-slot, 3. The shield of the casing consists of a metal plate having its sides struck down to form the sides of the casing, and formed with lugs, as usual, to set in slots 4 in the face-plate, and formed with a barrel, 5, to take the key-spindle, as shown in Fig. 10 of the drawings. On the inner face of the face-plate is a guide-stump, 6, to engage a slot in the bolt. Pins 7 are also fixed in this plate, which set in slots of the bolt and serve as guides to the locking-plates, hereinafter described. To limit the movements of the arm of the key-spindle, I set small studs 8 in the face-plate, and to receive the pivot end of the key-spindle a hole, 9, is made in the plate.

C designates the bolt, having a bolt end, 10, to slide in the slot 3 of the flange 2, a shoulder, 11, to limit its outward movement, and a slot, 12, to engage the guide-stump 6 of the casing. In the under part of the bolt is formed a recess, 13, to take the arm of the key-spindle, and at the upper edge of the bolt is formed a flange, 14, against the under face of which the springs of the tumblers are lodged, and slots 15 are also formed in the bolt, in which the pins 7 are arranged. A bearing-pin, 16, is fixed on the bolt, on which the tumblers are mounted. The lower rear edge of the bolt is formed with a double incline, 17, at the junction of which is a lug, 18, which engages with the inclines on the locking-pawl and serves to move that element or part in and out of engagement with the teeth of the locking-plates.

D designates the tumblers, the form and construction of which are shown in Fig. 3 of the drawings. Specially describing the tumblers, they consist of a metal plate having a hole, 19, to take the bearing-pin 16 on the bolt, and a spring, 20, is fixed in each tumbler, the free end of which bears against the under face of the flange 14 on the bolt. The under edge of the tumblers is formed with a curved recess, 21, to permit the key to turn freely, and in the free end of each tumbler is formed an open-end slot, 22, in which the arm of the locking-plates projects when the lock is in unlocked position, as shown in Fig. 2 of the drawings.

E designates the locking-plates, consisting of a metal plate formed with a slot, 23, arranged at right angles to the direction of the line of travel of the bolt, and within which the pins 7 are arranged, as shown. Projected from the inner central edge of each of the locking-plates is an arm or lug, 24, which engages the open-end slot 22 in its respective tumbler when the lock is in unlocked position, as shown in Fig. 2 of the drawings. The locking-plates

are formed with teeth 25 on the rear edge, as shown, which engage with the tooth of the pawl when the bolt is shot forward, as shown in Figs. 1 and 7 of the drawings.

F designates the locking-pawl. This consists of two arms struck substantially at right angles to each other. The lower arm, 26, is pivoted to the face-plate of the casing, as at 27, and is formed on its upper edge with a double incline, 28, arranged substantially coincident with the inclines 17 on the bolt. The lug 18 bears on these inclines 28 and rocks the pawl on its pivot, thus moving the pawl-arm to and from engagement with the teeth of the locking-plates. The other arm, 29, is formed with a tooth, 30, shaped to set between the teeth of the locking-plates, and thus hold the plates in any position such engagement may find them. This locking-pawl is arranged in such relative position to the other parts that it engages the teeth of the locking-plates just as the tumblers have lifted the locking-plates to the highest point by the rotation of the key, where they are held by the pawl.

G designates the key-spindle, formed with a pivot end to set in the usual bearing formed in the plate of the lock, and provided with a key-slot, 31, and an arm, 32, by the movements of which the bolt is reciprocated.

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

The parts may be assembled as follows: The locking-pawl is secured to the face-plate. Then the bolt is arranged in position. The tumblers and locking-plates are then set in position, as seen in Fig. 2 of the drawings. The key-spindle is then arranged in its bearing, and then the shield of the case is set over the parts and suitably secured.

The operation is as follows: The key being inserted in the slot of the key-spindle and turned, the steps of the key raise the tumblers, which, through the engagement of the slots in their free ends with the arms on the locking-plates, correspondingly raise the locking-plates. As the key-spindle is further rotated, the arm of the spindle commences to move the bolt, which brings the lug on the double inclines of the bolt in engagement with the incline on the arm of the locking-pawl and throws the pawl into engagement with the teeth of the locking-plates in the position they were moved by the tumblers, where they are held by the pawl. After the bolt has been carried forward far enough to release the tumblers from engagement with the locking-plates, the springs of the tumblers press the tumblers down, so that their ends set against the ends of the arms of the locking-plates, as seen in Fig. 1 of the drawings, and hold the bolt against reverse movement, except by the key which moved it into locked position. It will be perceived that before the bolt can be withdrawn the slots of the respective tumblers must be brought to register with arms of their respective locking-plates, and this can only be done by the key which locked the bolt, or the duplicate. The lock being unlocked, any key with the required number of steps may then be used to again lock, this invention being the same in that respect as the lock shown in my Letters Patent No. 370,183, dated September 20, 1887.

What I claim is—

1. The combination, with the casing of a lock provided with a boltway and a guide-stump, and pins to hold a locking-plate, of the bolt arranged within the boltway and formed with slot to engage the guide-stump and pins of the casing, a tumbler pivoted on the bolt to move therewith and formed with an open-end slot in the free end, the locking-plate formed with a slot to engage the pins of the casing and a projecting arm to engage the slot of the tumbler, and having teeth on its rear vertical edge, and a pivoted locking-pawl actuated by the movements of the bolt to engage the teeth of the locking-plate and hold it in the position to which it is lifted by the tumbler, substantially as described.

2. The combination, with the casing of a lock provided with a boltway and a guide-stump for the bolt, and pins to hold locking-plates, a key-spindle formed with an arm to move the bolt, and a key, of the bolt arranged within the casing and formed with slots to engage the guide-stump and pins in casing, a number of tumblers pivoted on the bolt to move therewith and formed with open-end slots in their free ends, a number of locking-plates formed with slots to engage the pins of the casing, and projecting arms to engage the slots in the tumblers, and having teeth on their rear vertical edge, and a pivoted locking-pawl actuated by the movements of the bolt to engage the teeth of the locking-plates and hold them in the position to which they are lifted by the tumblers, substantially as described, and for the purposes specified.

3. The combination, with the casing of a lock, a key, and a key-spindle formed with an arm to move the bolt, of a bolt mounted to slide in the casing and formed with a double incline and lug at its rear part, a series of spring-actuated tumblers pivotally mounted on the bolt to move therewith and formed with open-end slots in their free ends, a series of locking-plates mounted to slide transversely to the line of movement of the bolt and formed with arms to engage the slots in the tumblers, and teeth on their rear vertical edge, and a locking-pawl pivotally mounted in the casing and formed with a double incline to engage the lugs of the double incline on the bolt, and an arm having a tooth to engage the teeth of the locking-plates, substantially as and for the purpose set forth.

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

WILLARD D. DOREMUS.

Witnesses:
M. WALLACE,
CHAS. MCGEE.