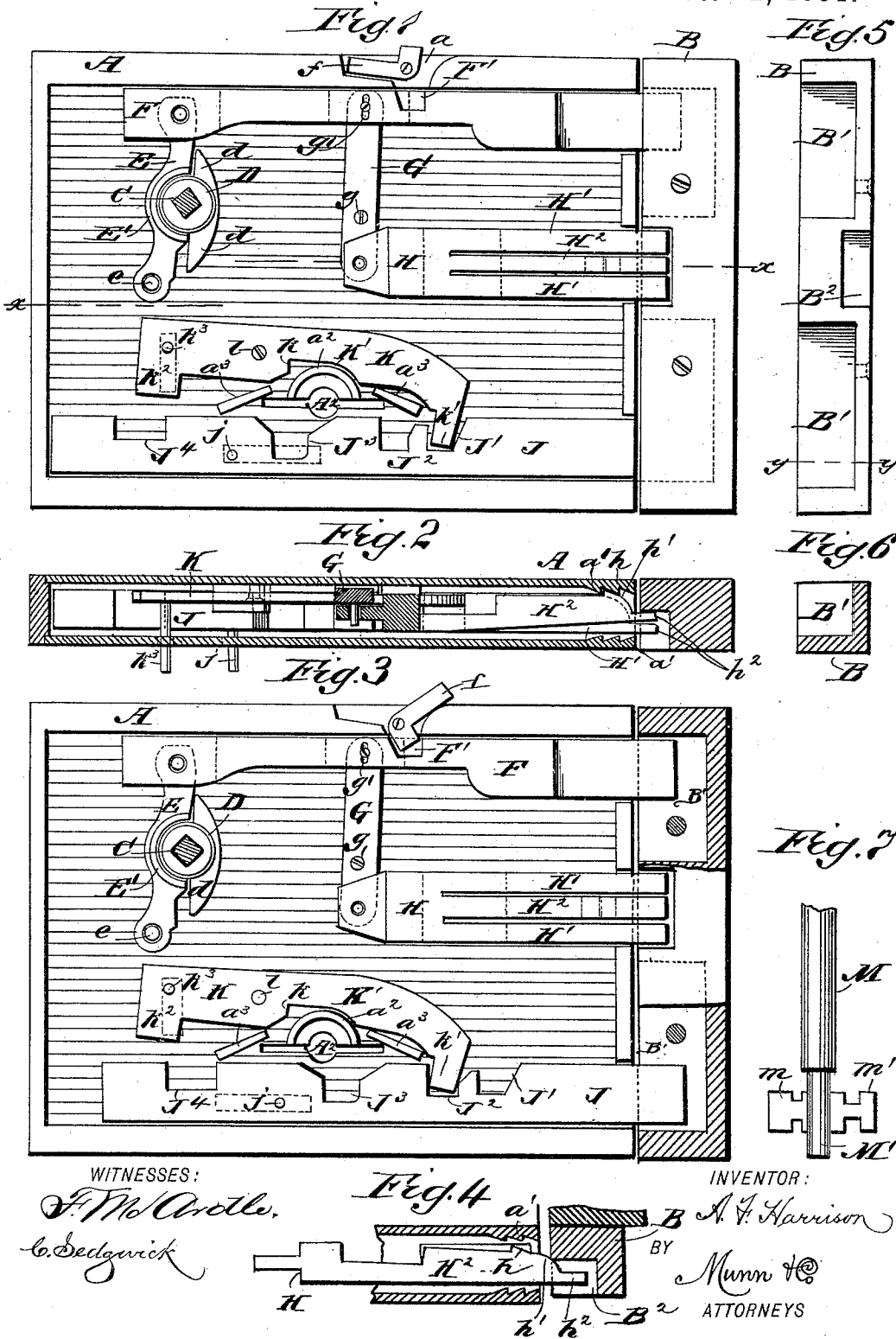


(Model.)

A. F. HARRISON.
LOCK.

No. 465,819.

Patented Dec. 22, 1891.



UNITED STATES PATENT OFFICE.

ALVIN F. HARRISON, OF GREELEY, KANSAS, ASSIGNOR OF TWO-THIRDS TO
LEVI W. HARRISON AND WILLIE H. HARRISON, OF SAME PLACE.

LOCK.

SPECIFICATION forming part of Letters Patent No. 465,819, dated December 22, 1891.

Application filed January 15, 1891. Serial No. 377,793. (Model.)

To all whom it may concern:

Be it known that I, ALVIN F. HARRISON, of Greeley, in the county of Anderson and State of Kansas, have invented a new and Improved Lock, of which the following is a full, clear, and exact description.

My invention relates to improvements in locks; and the object of my invention is to produce a simple and durable lock which may be attached to any kind of a door, which operates without springs, which will prevent the door from rattling, which will hold the door so that it cannot be accidentally opened, and which may be used as a night-lock as well as a day-lock, having means for being operated from the inside without a key.

To this end my invention consists in certain features of construction and combinations of parts which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional elevation of the lock with a side of the case removed and with the locking-bolt held within the case. Fig. 2 is a longitudinal section on the line *x x* of Fig. 1. Fig. 3 is a sectional elevation with the side of the case removed and showing the bolt in locked position. Fig. 4 is a broken detail sectional view of the supplementary bolt and its connections with the lock-case and the keeper-plate. Fig. 5 is an end view of the keeper-plate. Fig. 6 is a cross-section of the same on the line *y y* of Fig. 5, and Fig. 7 is a broken detail view of the key used with the lock.

The lock is provided with a main case A, which is substantially like the ordinary lock-case, being made in two parts, and which may be secured to the side of a door or may be mortised into the same, and the lock is also provided with a keeper-plate B, which is secured to the door-frame opposite the lock and which is substantially like the ordinary keeper-plate, it having recesses B' on each side to receive the latch-bolt and the locking-bolt; but it has also a central recess B² on the side opposite the recesses B', which recess is adapted to receive the supplementary bolt, as hereinafter described.

The lock has a knob-spindle C extending through it in the ordinary way and operated in the usual manner, and the spindle carries a follower comprising a sleeve D and cam-like projections *d* on opposite sides of the sleeve, and the follower is adapted to operate the link E, which is pivoted at its lower end to the wall of the case, as shown at *e*, and has a central bend E' to receive the sleeve D, the upper end of the link being pivoted to the latch-bolt F, which slides in the upper portion of the case and the front end of which is adapted to project through a recess in the case and into the upper recess B' of the keeper-plate. It will be observed that when the door is shut and the latch-bolt F moved out, as shown in Fig. 1, the follower will operate the link E and bolt F to open the door when the follower is turned in either direction; but after the door is thrown open the moving of the follower does not affect the bolt. The bolt F has a recess F' in its upper edge, and when the bolt is thrown out, as in Fig. 1, the recess comes beneath a recess *a* in the top of the case A, and in this recess is pivoted an elbow-latch *f*, which, when thrown back, as in Fig. 1, lies in an elongated part of the recess *a*, but when thrown forward, as in Fig. 3, engages the recess of the bolt F and holds the bolt in locked position. The bolt F is connected by means of a link G with a short supplementary bolt H, which slides longitudinally in the central part of the case and which projects through a recess in the front end of the case. The link G is pivoted near its lower end, as shown at *g*, to the case A. Its extreme lower end is pivoted to the inner end of the supplementary bolt H and its upper end is slotted, as shown at *g'*, and is connected with the latch-bolt F, the latch-bolt being recessed on its under side, as indicated by dotted lines in Figs. 1 and 3, to receive the end of the link and to permit of the necessary movement of the link. It will thus be seen that the latch-bolt F and the supplementary bolt H must move simultaneously, the latch-bolt being thrown outward when the supplementary bolt is moved inward. The supplementary bolt H is split longitudinally through a greater part of its length to form the outside fingers H' and the central finger H², and the central

finger is thinned on one side, so that it will be a little lower than the outside fingers, and this central finger has a tooth h on the inner side, near the end, which tooth is adapted to engage the ratchet-teeth a' on the walls of the case A and prevent the bolt from being pushed inward. The case A is thickened, as best shown in Fig. 2, to provide for the teeth, and it will be noticed that the teeth a' are arranged on both sides of the case A, so that the bolt H may be tipped over, if desired, and the lock may thus be used as either a right-handed or a left-handed one. The fingers H' and H^2 are rounded, as shown at h' , near their outer ends and terminate in projecting lips h^2 , which are adapted to enter the recess B^2 of the keeper-plate B.

The operation of the supplementary bolt H and the latch-bolt F is as follows: When the door is opened, the latch-bolt F will be drawn into the case and the supplementary bolt H will project from the end of the case, and when the door is closed the middle finger H^2 of the bolt H will first strike in the recess B^2 of the keeper-plate, and this will raise the tooth h from the teeth a' , so as to permit the bolt to slide. As the door continues to close, the rounded portion h' of the bolt H strikes the wall of the keeper-plate and forces the bolt inward, and the inward movement of the bolt H, acting on the link G, throws the latch-bolt F outward, so that it engages the keeper-plate, the movement of the bolts being stopped by the link E striking the sleeve D, and it will thus be seen that the door cannot be closed without throwing the latch-bolt into the plate, so that there will be no danger of the door being opened by the wind or by accident. When the door is closed, the lips h^2 all rest on the keeper-plate at B^2 , and the pressure of the keeper middle finger has a tendency to crowd the door outward; but this tendency is resisted by the bolt F, which presses against the keeper-plate from the inside, and as a result the door is held rigidly, so that it will not rattle.

In the bottom of the case A is a locking-bolt J, which slides longitudinally in the case and is adapted to project through a recess in the end of the case and to enter the lower recess B' of the keeper-plate, and the bolt has a pin j , which is secured to it and which projects through an elongated slot in the case A, so that by means of the pin the door may be moved independently of the other connections, which will be described hereinafter. The bolt J has near the front end a recess J' , which receives the tumbler and holds the bolt in the case, a recess J^2 a little in the rear of the recess J' , and which receives the tumbler to hold the door locked, a recess J^3 , which is located near the center of the bolt and which is adapted to receive a bit of the key, so that the tumbler may be thereby thrown, and a recess J^4 near the rear end, which is adapted to receive a projecting part of the tumbler in case the tumbler is thrown too far.

The key-hole A^2 is located centrally above the bolt J, the key-hole comprising a central round hole, with elongated portions extending oppositely and longitudinally in the case, and above the hole is a semicircular guide a^2 . At each end of the guide are formed inclined guards a^3 , the guide a^2 and guards a^3 being wider than the thickness of the tumbler and serving to prevent the tumbler from being tampered with.

A tumbler K is pivoted on a pin l above the key-hole A^2 , the tumbler being cut away on the under side, as shown at K' , so that it will fit over the guide a^2 , and the cut-away portion has a notch k therein, which is adapted to engage a bit of the key, so that the tumbler will be thereby thrown. The tumbler has at its front end a depending portion k' , which is adapted to enter the recess J' of the locking-bolt when the door is unlocked and to enter the recess J^2 of the locking-bolt when the door is locked, and at the rear end of the tumbler is a somewhat similar depending portion k^2 , which will enter the recess J^4 of the locking-bolt if the front end of the tumbler is thrown too high, and will thus prevent the bolt from being thrown.

The tumbler K has a pin k^3 , which projects through an elongated transverse recess in the case A of the lock, so that the tumbler may be moved by the pin, if desired, and it will thus be seen that the pins on the tumbler and on the locking-bolt enable the lock to be operated from the inside without a key, as by grasping the two pins the tumbler may be adjusted so that it will not engage the bolt, the bolt may be moved outward, so as to lock the door, and the tumbler may then be made to engage the bolt and hold it in a locked position, as shown in Fig. 3. This will not prevent the lock from being operated by a key from the outside.

The key used in connection with the lock is shown in Fig. 7, and consists of the main spindle M, which is reduced at one end, as shown at M' , and from the reduced portion the bits m and m' project on opposite sides, one being shorter than the other, so that the key may not be too easily duplicated, and the bits have notches which fit the guide a^2 and any other guides, which may be placed on the wall of the case, in the ordinary way.

The locking portion of the lock is operated as follows: We will suppose that the door is unlocked and that the locking-bolt and tumbler are in the position shown in Fig. 1. The key is then inserted in the key-hole of the door, so that the short bit will extend into the recess J^3 and the longer bit will extend above the guide a^2 . The key is then turned further, and the longer bit, striking the tumbler at k , will raise the tumbler from engagement with the bolt, and the shorter bit, striking against the front wall of the recess J^3 , will throw the bolt forward, so that it will engage the keeper-plate. To unlock it the movement is reversed. It will be noticed that the tumbler K is piv-

oted a little in the rear of the center, so that its front end will normally drop into engagement with the locking-bolt.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a lock, the combination, with a sliding latch-bolt, of a supplementary bolt, and a pivoted link having its ends pivotally connected to the said bolts, substantially as described.

2. In a lock, the combination, with the case, a sliding latch-bolt, a link pivoted at one end to the case and its other end pivotally connected to the bolts, and the spindle provided with projections for engaging the link, of a supplemental bolt, and a link pivoted between its ends to the case and having its ends pivotally connected with the said bolts, substantially as described.

3. A lock comprising a case, a sliding latch-bolt mounted therein and adapted to be operated by the knob, a keeper-plate to receive the latch-bolt, said plate having a recess in its outer side, a supplementary bolt parallel with latch-bolt and having its front end rounded to engage the outer recess of the keeper-plate, and a link pivoted in the case and having its ends pivoted to the latch-bolt and supplementary bolt, substantially as described.

4. In a lock, the combination, with a main case and a keeper-plate having recesses on its outer and inner sides, of a sliding latch-bolt,

a supplementary bolt having its outer end formed into fingers rounded near the ends to engage the outer recess of the keeper-plate, one of said fingers having a tooth to engage teeth on the main case, and a link pivoted in the case and having its ends pivoted to the latch-bolt and to the supplementary bolt, substantially as described.

5. In a lock, the combination, with a case and a keeper-plate having an outer and inner recess, of a sliding latch-bolt, a sliding supplementary bolt having a series of fingers, with their outer ends rounded and terminating in lips, the middle finger having a tooth to engage teeth on the lock-case, a stop for the supplementary bolt, and a link pivoted in the case and having its ends pivoted to the latch-bolt and the supplementary bolt, substantially as described.

6. In a lock, the combination, with a case and a sliding bolt therein below the key-hole of the case and provided with recesses in its upper edge, of a tumbler pivoted in the case above the key-hole and provided with a notch in its lower edge to be engaged by the bit of a key and with a depending portion at each end for engaging the recesses of the bolt, substantially as herein shown and described.

ALVIN F. HARRISON.

Witnesses:

JOHN SPROUL,
S. R. CURTIS.