

R. V. CHEATHAM.
ELECTRIC LOCK.

Patented Feb. 13, 1894.

Fig. 1.

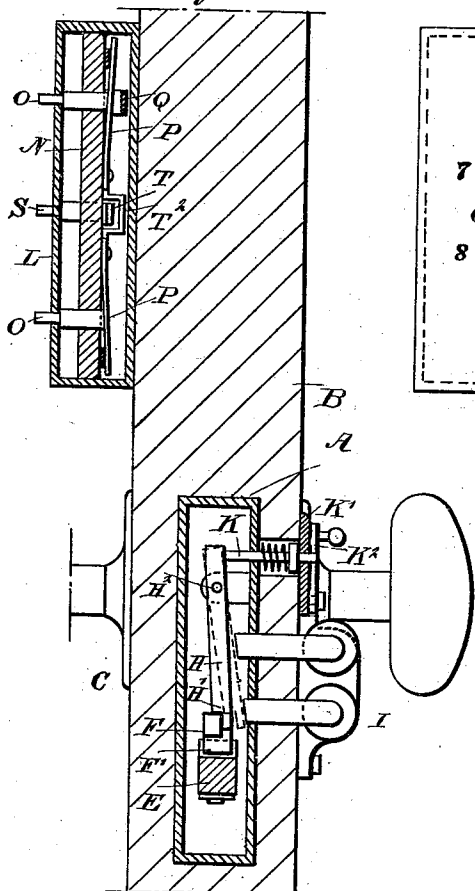


Fig. 2.

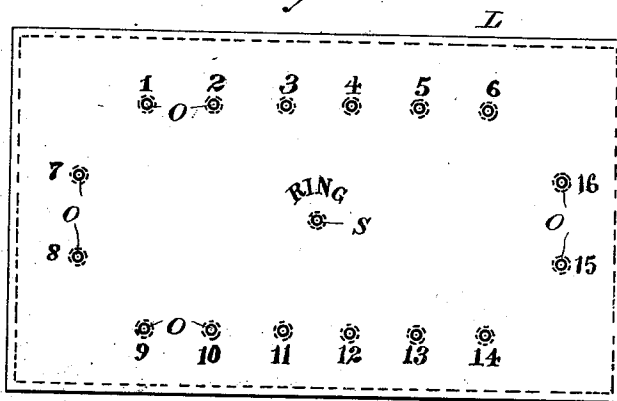


Fig. 3.

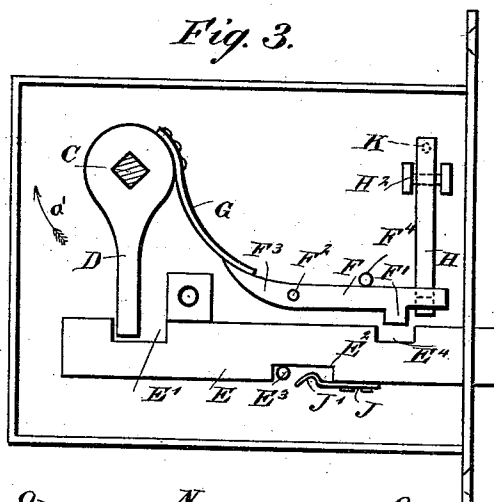
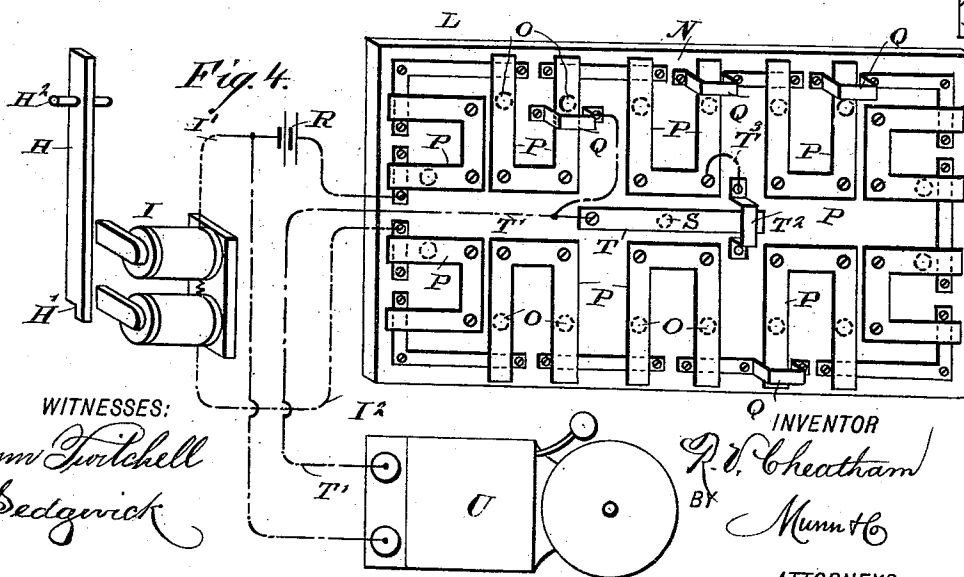


Fig. 4.



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ROBERT V. CHEATHAM, OF LOUISVILLE, KENTUCKY.

ELECTRIC LOCK.

SPECIFICATION forming part of Letters Patent No. 514,813, dated February 13, 1894.

Application filed February 7, 1893. Serial No. 461,329. (No model.)

To all whom it may concern:

Be it known that I, ROBERT V. CHEATHAM, of Louisville, in the county of Jefferson and State of Kentucky, have invented a new and Improved Electric Door-Lock, of which the following is a full, clear, and exact description.

The invention relates to improvements in electric door locks used for securing or fastening all ordinary doors in houses, especially doors opening to the outside.

The object of the invention is to provide a new and improved electric door lock which is simple and durable in construction, employing no key, and not liable to be opened without the party knowing the combination.

The invention consists of a spindle arm for actuating the door bolt, and carrying a spring pressing a lever for locking the bolt, and an armature lever for locking the said bolt lever.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

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 side elevation of the improvement. Fig. 2 is a face view of the combination mechanism. Fig. 3 is a rear face view of the lock; and Fig. 4 is a perspective view of the combination mechanism.

The improved electric door lock is provided with a suitably constructed casing A preferably mortised in the usual manner in the door B and provided with the door knob spindle C, extending through the door B and carrying on either end the usual knob for turning the spindle.

On the spindle C, within the casing A, is secured an arm D, see Fig. 3, adapted to engage with its free end a notch E' formed in the door bolt E fitted to slide longitudinally in the casing A and serving to engage the usual keeper in the door jamb when the said bolt is shot out. On the under side of the bolt E is formed a notch E² engaged by a pin E³ secured in the casing A and serving to limit the longitudinal sliding motion of the bolt E. In the top edge of the bolt E, and near the front end of the same, is arranged

another notch E⁴ adapted to be engaged by a lug F' formed on the under side of a lever F pivoted at F² within the casing A, the said lug serving to lock the bolt E when shot out, to prevent opening of the door. The rear end F³ of the lever F is pressed on by the free end of a spring G secured to the pivot end of the arm D, as is plainly illustrated in Fig. 3.

The bolt lever F previously mentioned is adapted to be locked in place at the time its lug F' engages the notch E⁴, by the notched lower end H' of an armature lever H pivoted at H² to the casing A and adapted to be attracted by a pair of electro-magnets I, supported on the inside of the door B, as is plainly shown in Fig. 1.

In order to hold the bolt E temporarily in an innermost position, I provide the under side of the said bolt with a spring J adapted to engage with its free hook end J' the fixed pin E³, as will be readily understood by reference to Fig. 3.

As long as the armature lever H engages, with its notch H', the free end of the bolt lever F, the latter is held in a locked position in the notch E⁴ of the bolt E, so that the latter itself is locked and cannot be moved inward or outward on the turning of the door knob spindle C. When, however, the armature lever H is attracted by the electro-magnets I, so as to swing out of contact with the lever F, as indicated in dotted lines in Fig. 1, then the lever F swings upward with its lug F' on turning the door knob spindle C in the direction of the arrow a', it being understood that the spring G exerts a pressure on the end F³ of the lever F, which causes the front end of the latter to swing upward and thereby move the lug F' out of contact with the notch E⁴. On the further turning of the door knob spindle C in the direction indicated, the arm D moves the bolt E inward so as to unlock the door.

The upward swinging movement of the lever F is limited by a stop pin F⁴, shown in Fig. 3 and attached to the casing A. When the bolt E moves into a rearmost position, the fixed pin E³ is engaged by the hook J' of the spring J, which thus holds the bolt in a locked position. When the door knob spindle C is turned in the inverse direction of the arrow a', the arm D moves the bolt E outward to

engage the keeper in the door jamb, thus locking the door.

When it is desired to open and close the door without locking the bolt E, I move the armature lever H into the position shown in dotted lines in Fig. 1, so that the lever F is free and its lug F' is raised out of the notch E' whenever the door knob spindle C is turned in the direction of the arrow a'. Now, for this purpose I provide a spring-pressed pin K fitted to slide transversely in part of the casing A and part of a plate K' secured to the door B at the inside thereof. This pin K is adapted to engage, at its inner end, the upper end of the armature lever H, the outer end of the said pin being adapted to be pressed on by a spring K² pivoted to the said plate K', see Fig. 1. When the spring K² engages the pin K the armature lever H is held out of contact with the bolt lever F, and consequently the latter can readily swing upward whenever the knob spindle C is turned. When the pin K is not pressed on by the spring K², the armature lever H is free to engage, with its lower end, the lever F, unless the said armature lever H is attracted by the magnets I.

In order to close the circuit connected with the magnets I, I provide an electric combination mechanism presently to be described and provided with a casing L, secured to the door B, at the outside thereof, as is plainly indicated in Fig. 1. Within this casing L is arranged a vertically disposed insulating partition N, in which are fitted to slide a series of push buttons O extending with their front ends through the front plate of the casing L, so that the outer ends of the said push buttons can be pressed on by the operator on the outside of the door. The inner ends of the push buttons O are pressed on by springs P, some of which are adapted to make connection with keepers Q, attached to the inner face of the partition N and serving to form a contact plate as well as a stop for the movement of the corresponding spring P. A number of such contact plates Q form the combination and these plates are connected by wires I' and I² with the electro-magnets I, one of the wires also containing the battery R, so that when the proper number of push buttons O forming the combination are pressed on simultaneously the circuit will be closed and the electro-magnets I actuated, so as to attract the armature lever H, which thus unlocks the lever F and permits the operator to move the bolt E inward on turning the knob spindle C in the direction of the arrow a', as above described. When any of the push buttons not in the combination is pressed, the circuit is not closed, and consequently the armature lever H is not attracted and remains in its position, that is, locking the lever F, so as to lock the bolt E, as above described.

In the middle of the casing L is arranged a push button S, similar in construction to the push buttons O, but connected with an

electric door-bell U connected with the battery R, so that the latter serves the two-fold purpose of actuating the magnets I and the door-bell U. The push button S is engaged at its inner end by a spring plate T connected at one end by a wire T' with the door-bell U, and the free end of the said plate is adapted to make contact with the contact plate T² secured to the partition N, see Fig. 4, and connected by wire T³ with one of the spring contact plates P in the circuit of the magnets I, but not forming a part of the combination for unlocking the bolt E. Now when the push button S is pressed the spring plate T makes connection with the contact plate T², so that the circuit is closed and the electric door bell U sounds the alarm.

As shown in Fig. 2, the push buttons O are numbered consecutively, so that the owner of the house can readily find the push buttons forming the combination, but the numbering may be omitted.

As illustrated in Figs. 2 and 4, the push buttons 1, 3 and 10 form the combination, so that the buttons so numbered must be pressed simultaneously to close the circuit to cause the magnet I to attract the armature lever H.

It will be seen that by this construction a key is dispensed with and at the same time the battery for the electric door-bell serves as battery for the electric door lock.

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

1. An electric door lock, comprising a spindle arm secured to the knob spindle and adapted to actuate the door bolt, a spring secured on the said arm, and a lever pressed on by the said spring and adapted to lock the door bolt, substantially as shown and described.

2. An electric door lock, comprising a knob spindle arm adapted to move the door bolt, a spring held on the said arm, and a lever pressed on at one end by the said spring, and formed at its other end with a lug adapted to engage a notch in the door bolt, to lock the latter in place when in an outermost position, substantially as shown and described.

3. An electric door lock, comprising a lever adapted to be actuated from the knob spindle and serving to lock the bolt in place when in an outermost position, and an armature lever adapted to lock the said bolt lever, to prevent the latter from disengaging the door bolt, substantially as shown and described.

4. An electric door lock, comprising a lever adapted to be actuated from the knob spindle, and serving to lock the bolt in place when in an outermost position, an armature lever adapted to lock the said bolt lever, to prevent the latter from disengaging the door bolt, and means, substantially as shown and described, for holding the said armature lever out of contact with the said bolt lever, substantially as set forth.

5. An electric door lock, comprising a lever

adapted to be actuated from the knob spindle, and serving to lock the bolt in place when in an outermost position, an armature lever adapted to lock the said bolt lever, to prevent
5 the latter from disengaging the door bolt, an electro-magnet for the said armature lever, and a combination mechanism connected with the circuit of the said electro-magnet to close the said circuit, substantially as shown and de-
10 scribed.

6. In an electric door lock, the combination with a sliding bolt and means for operating it of a combination mechanism comprising a series of push buttons, a circuit closer connected
15 with certain of the push buttons, and an elec-

tro-magnet connected with some of the said circuit closers, substantially as shown and described.

7. An electric door lock, provided with a combination mechanism comprising a series
20 of push buttons, a circuit closer connected with certain of the push buttons, and an electro-magnet connected with some of the said circuit closers, the armature lever of the said electro-magnet normally locking the door bolt,
25 substantially as shown and described.

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Witnesses:

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