

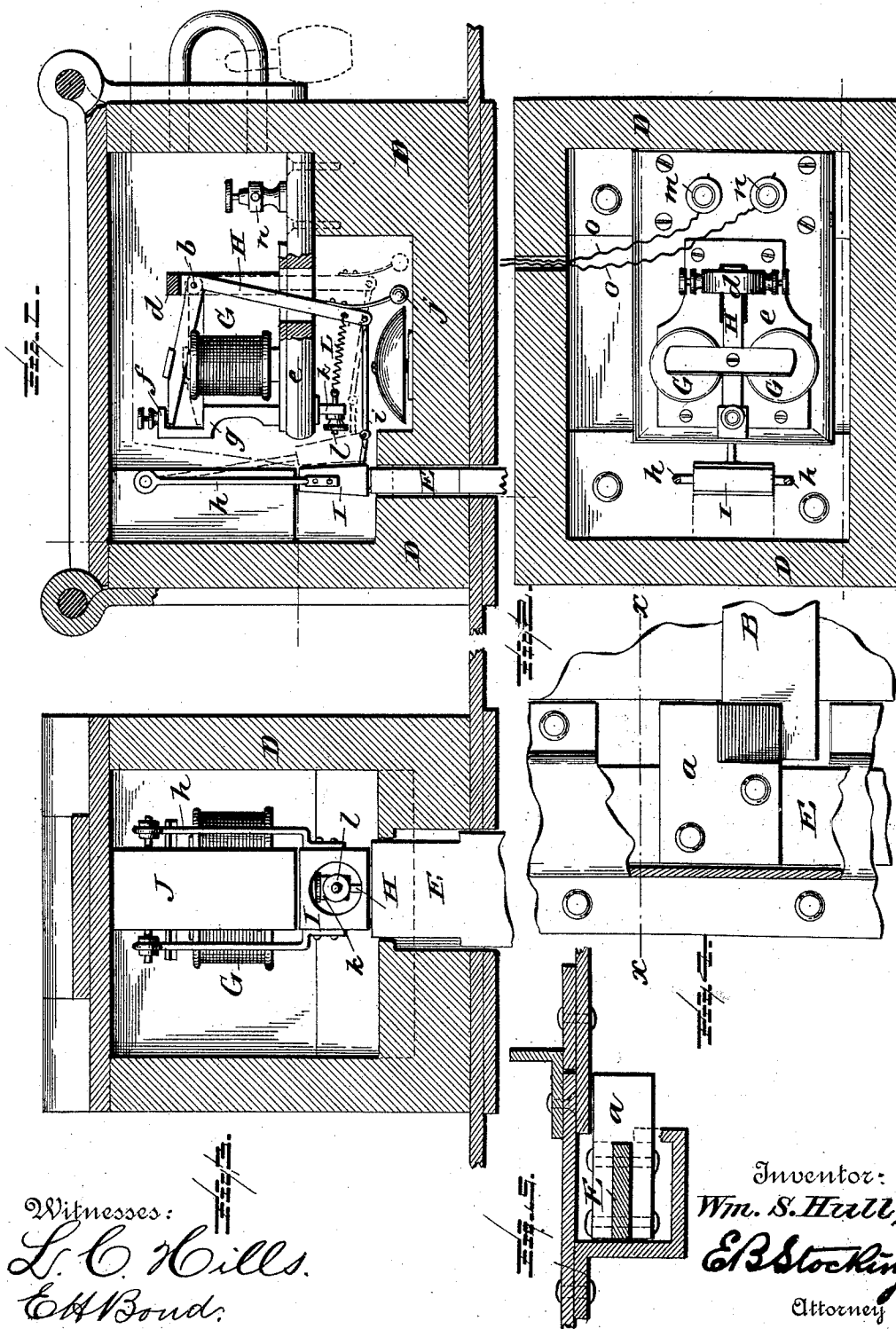
(No Model.)

2 Sheets—Sheet 1.

W. S. HULL.
ELECTRIC LOCK.

No. 460,391.

Patented Sept. 29, 1891.



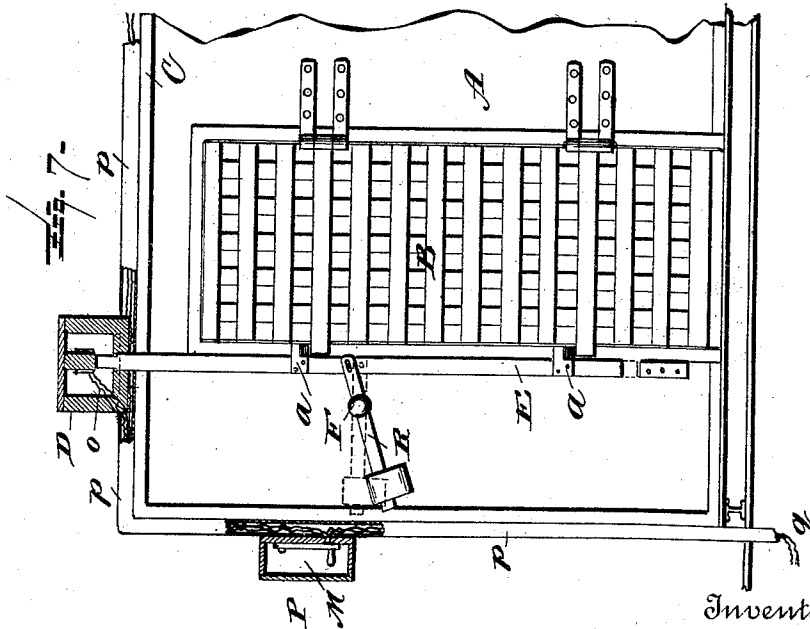
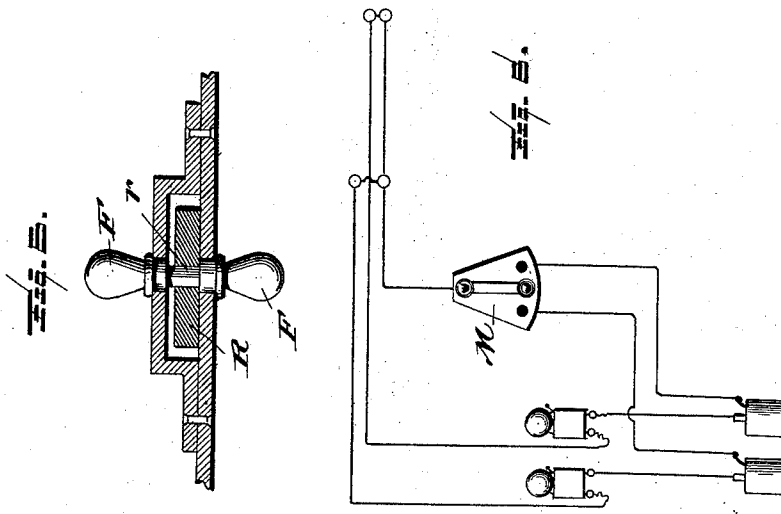
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Witnesses
L. C. Hulls
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UNITED STATES PATENT OFFICE.

WILLIAM S. HULL, OF SHEFFIELD, ALABAMA.

ELECTRIC LOCK.

SPECIFICATION forming part of Letters Patent No. 460,391, dated September 29, 1891.

Application filed December 31, 1890. Serial No. 376,330. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. HULL, a citizen of the United States, residing at Sheffield, in the county of Colbert, State of Alabama, have invented certain new and useful Improvements in Electric Locks, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in electric locks, and while I have chosen to show the present improvement in connection with a jail-cell I wish it distinctly understood that the invention is not restricted to such use, as it may be as readily applied to bank-vault doors and other uses.

The invention has for its objects among others to provide an improved lock of this character which shall be simple, cheap of manufacture, and free from derangement by tampering by the prisoners or other malicious persons.

Other objects and advantages of the invention will hereinafter appear, and the novel features thereof will be specifically defined by the appended claims.

The invention is clearly illustrated in the accompanying drawings, which, with the letters of reference marked thereon, form a part of this specification, and in which—

Figure 1 is a longitudinal section through my improved lock. Fig. 2 is a plan view of the same with the inclosing case in section. Fig. 3 is a transverse section through the same. Fig. 4 is a detail in elevation with parts broken away. Fig. 5 is a section on the line *xx* of Fig. 4. Fig. 6 is a sectional detail showing the connection of the balance-bar with the operating knob-shank. Fig. 7 is a front elevation with parts in section, showing the connection with the door, the conducting-wires and their inclosing pipes also being shown. Fig. 8 is a diagrammatic view showing the switch-board and its connections with the battery and two alarms and locks.

Like letters of reference indicate like parts throughout the several views in which they occur, it being understood that the parts not specifically described—such as the battery

and the like—are or may be of any of the known or preferred forms of construction.

Referring now to the details of the drawings by letter, A designates what may be considered either a cell or a bank-vault, and B the door thereof, which may be, of course, of any known construction, except as hereinafter specified.

C is the ceiling or top of the cell or vault, and D is the box or casing of my electric lock, which is shown as secured to the top. (See Fig. 7.) It may be secured above or under the door, either inside or outside of the corridor. In a jail in a system of one tier of cells it will be found best to locate the box on top of the cells; but where there are two or more tiers of cells it will be found best to locate the boxes in the corridor and above each door.

E is the latch-bar arranged to move vertically and provided with a suitable horizontal beveled lug or lugs *a* to engage the striker of the door. When the auxiliary locking device hereinafter described is removed, so that the latch-bar can move in the direction of its length far enough so that the bevel-lug of the latch bar or bolt will clear the striker-bar of the door, the latch-bar may be raised by the knob F.

The box D should be provided with a suitable door and a lock, as seen in Fig. 1, and within this box is arranged a magnet G of any known form and provided with an armature H, which is in the form of a bell-crank lever, as seen in Fig. 1, being pivoted at its elbow at *b* to a suitable support, as *d*, its vertical portion or arm being arranged to swing through a suitable slot provided therefor in the base-plate *e*. (See also Fig. 1.) The free end of the horizontal arm of the armature is arranged to move between the two contact points or arms *f* and *g*, so as to make and break the circuit, as will be readily understood.

I is the auxiliary locking device, which in this instance is shown as a bolt or bar carried at the lower ends of the hangers *h*, which are pivotally suspended from a bar or stop-plate J within the box D, the said bolt or bar

being so arranged relatively to the main latch bar or bolt that when swung into position, as shown in Figs. 1 and 3, it will lie in the path of the said latch-bolt and stop its movement in the direction of its length. The hangers are free to swing easily on their pivot. The auxiliary device is pivotally connected with the lower end of the vertical arm of the armature in any suitable manner, in this instance shown as connected by means of the jointed rod or link *i*. (See Fig. 1.) The free end of the vertical arm of the armature carries a hammer-arm and hammer *j*, which is designed to engage a bell or other suitable form of alarm *A'*, affixed within the box in the path of said hammer as the armature is swung on its pivot. The said vertical arm of the armature is connected with some suitable fixed part, as the arm *k* within the box by a spring *L*, connected with the set-screw *l*, as seen in Fig. 1.

The positive and negative binding-posts *m* and *n* of the box *D* are connected by suitable connections *o* with a switch-board or other analogous device *M*, which is arranged within a suitable strong box or casing *P* in any desired location, the said wires being preferably incased in pipes or coverings *p*, which should be strongly affixed in place to prevent possible tampering with the wires. I may also run wires *q* from the switch-board to the office or other preferred place, and so connect them that every time the circuit is made and broken, or should a wire become cut or otherwise deranged, an alarm will there be sounded. In Fig. 8 is illustrated one way of carrying out this object. Other ways may of course be devised. The batteries here employed may be of any of the well-known forms. The main latch-bolt will be so shaped at the point where it enters the lock-box *D* that no instrument can be inserted alongside of it into the box to derange the lock.

R is the balance-bar, secured to the knob-shank *r* and at its free end weighted. Its other end is connected with the latch-bolt by means of a suitable connection providing slight loose play, as seen in Fig. 7. The object of this balance-bar is to take the load from the latch-bar, so that the striker of the door when coming in contact with the bevel-face of the lug on the latch-bolt will raise the said latch-bar with the least amount of friction.

Various modifications in detail may be resorted to without departing from the spirit of the invention or sacrificing any of its advantages.

The main latch-bolt, as well as the balance-bar, should be incased in suitable armor, as shown in Figs. 4, 5, and 6, to prevent tampering therewith.

The operation is simple, and will be readily understood from the foregoing description when taken in connection with the an-

nexed drawings. With the bolt locked the parts are in the position in which they are shown in full lines in Fig. 1. When the current is thrown on, which is done from the switch-box by turning the switch or putting in a plug or pushing a button, the armature is drawn to its magnet, and the vertical arm thereof, being connected with the auxiliary device, draws the latter from above the latch bar or bolt and allows said latch bar or bolt to travel up high enough so that the bevel lug or lugs on said latch bar or bolt will clear the striker-bar of the door. When the door is closed and the latch bar or bolt has secured the striking-bar of the door, the current is taken off and the spring connected with the armature shoots the auxiliary device above the end of the latch-bar and between the same and the stop, and thus prevents the said latch-bar being raised, and the door is thus securely locked. At the same time that the bolt is shot the hammer-arm on the armature strikes and rings the alarm, so that the person in charge knows that the bolt is in place. It will be readily understood how the device shown and described can be employed either with an open or closed circuit, and a detailed description thereof is not deemed necessary.

What I claim as new is—

1. The combination, with the main latch-bolt, of an auxiliary bolt suspended to swing into line with and contact with the end of said bolt, and an armature of an electro-magnet connected with said auxiliary locking device by jointed connections, substantially as specified.

2. The combination, with the main latch-bolt, of an auxiliary bolt suspended to swing into line with and contact with the end of said bolt, and an armature of an electro-magnet connected with said auxiliary locking device by jointed connections, and an alarm a portion of which is carried by said armature, substantially as specified.

3. The combination, with the main latch-bolt, of an auxiliary locking-bolt, pivoted hangers carrying the same, an electro-magnet and its bell-crank, pivoted armature, and a jointed connection between one arm of the armature and auxiliary locking device, substantially as specified.

4. The combination, with the main latch-bolt, of an auxiliary locking-bolt, pivoted hangers carrying the same, an electro-magnet and its bell-crank, pivoted arms, and a jointed connection between one arm of the armature and auxiliary locking device, with a bell-hammer carried by the armature, and a fixed alarm arranged in the path of said hammer, substantially as specified.

5. The combination, with the sliding latch-bolt and the swinging auxiliary locking device therefor, of the balance-bar secured between its ends to a knob-shank, with one end

weighted and the other end having a loose connection with the latch-bolt, substantially as specified.

5 6. The combination, with the main sliding latch-bolt, the pivoted bell-crank armature, the pendulous auxiliary locking device, and the beveled lugs of the latch-bolt, of the door, its strikers, the pivoted weighted balance-bar, and a loose connection between the end

of said balance-bar and the latch-bolt, substantially as specified.

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

WILLIAM S. HULL.

Witnesses:

JAMES R. CROW,
S. D. LINDREY.