P. BOWE.

Electric Lock.

No. 199,255. Patented Jan. 15, 1878.

Fig. 1.

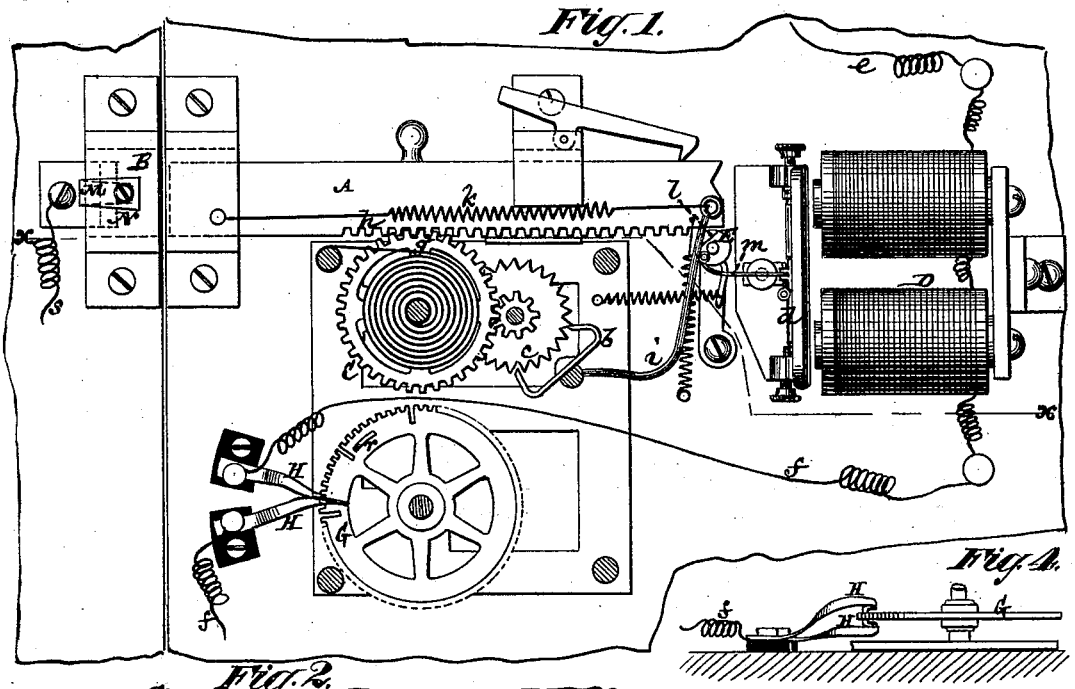


Fig. 4.

Fig. 2.

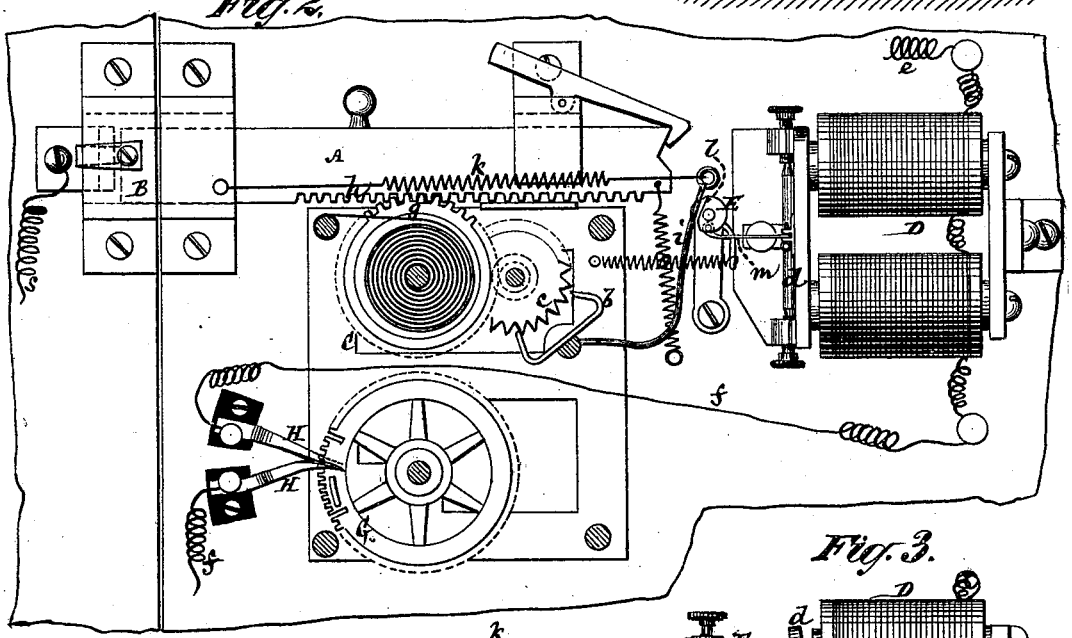
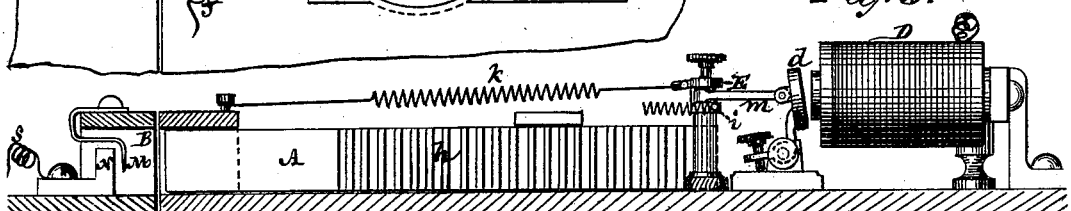


Fig. 3.



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UNITED STATES PATENT OFFICE.

PATRICK BOWE, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN ELECTRIC LOCKS.

Specification forming part of Letters Patent No. **199,255**, dated January 15, 1878; application filed December 5, 1877.

To all whom it may concern:

Be it known that I, PATRICK BOWE, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Electric Locks, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention consists in certain novel combinations of devices for shooting the bolts of locks in buildings or structures of different kinds by clock-work mechanism held in check by a stop, but released to shoot the bolt by an electro-magnet on opening or closing an electric circuit in which said magnet is arranged.

The invention also consists in a combination of a circuit closer or opener with any one or more of a series of locking-bolts, clock-work mechanism for shooting each of said bolts, a stop for holding said clock-work mechanism in check, and an electro-magnet for releasing said mechanism to operate the bolts, whereby, on opening or closing an electric circuit in which each electro-magnet is arranged, the several bolts in a series of locks are simultaneously shot, or made to engage successively with their respective keepers, by the clock-work mechanisms or motors actuating the bolts.

The invention likewise consists in a combination, with the hour or striking movement of a time-piece, of a circuit closer or opener controlled by said movement, an electro-magnet in the same electric circuit as the circuit closer or opener of the time-movement, a stop controlled by said magnet, a clock-work mechanism or motor held in check by said stop, and a bolt operated by said motor when the stop is released from its hold on the motor, whereby the bolt is shot at any particular hour or time by the action of the time-piece.

Furthermore, the invention consists in certain advantageous combinations of details for carrying out or putting into practice the main principles or features of the invention.

Figure 1 represents an elevation of apparatus constructed in accordance with my invention, and showing a locking-bolt as disengaged from its keeper, and the clock-motor which operates the bolt as held in check or arrested by a stop which is controlled by an electro-magnet, also showing the striking-wheel of a time-piece, and a circuit-closer controlled thereby, as open. Fig. 2 is a similar view to Fig. 1, but showing the stop as adjusted by the electro-magnet to liberate the clock-motor, the locking-bolt shot, and the circuit-closer which is controlled by the striking-wheel of the time-piece as closed. Fig. 3 is a section in a plane or planes at right angles to the former figures on the irregular line *x x* in Fig. 1. Fig. 4 is an edge view of the striking-wheel of the time-piece, with the circuit-closer controlled by said wheel as closed.

A is a sliding locking-bolt, and B its keeper. C is a clock-work motor for shooting said bolt when the anchor *b* of said motor is liberated from hold or lock of the escape-wheel *c* by the action of an armature, *d*, of an electro-magnet, D, through the intervention of an adjustable stop, E. Said magnet is connected by wires *e* and *f* with the opposite poles of a battery, or with a battery and earth, the same forming an electric circuit, which may either be automatically broken or closed at a given period or hour in the day, as hereinafter described, or which may be broken or closed at pleasure of the operator, and at different periods, to effect the shooting of the bolt by the clock-work motor. A wheel, *g*, of said motor gears with a rack, *h*, on the bolt A to shoot the bolt, and the arbor of the anchor *b* has an arm, *i*, controlled by a spring, *k*, operating to keep said arm borne up against the adjustable stop E, which may be a turning one and of an eccentric construction, or flattened on its one side, *l*, to provide for the locking or liberation of the anchor *b* with or from the escape-wheel *c*, accordingly as it is required to hold back the bolt A or to shoot it by the motor C. When the arm *i* of the anchor *b* rests against the rounded or salient portion of the stop E, as shown in Fig. 1, then said anchor locks or holds the escape-wheel, and so arrests the movement of the motor C. This is the position of said parts when the bolt A, which may be lifted out of gear with the wheel *g* to draw it back, is withdrawn from its keeper B. When, however, the stop E is adjusted so that its flattened portion *l* receives upon or against it

the arm *i* of the anchor *b*, as shown in Fig. 2, then the escape-wheel *c* is let free, and the motor C shoots the bolt A. Said stop E is thus controlled to provide for the shooting of the bolt A by means of the electro-magnet D through its armature *d*, as the circuit in which said magnet is arranged is broken or closed, the armature being connected with the stop E by an arm, *m*, and acting on the stop in an inverse relation with a spring, *n*.

The circuit in which the magnet is arranged may be opened or closed by any suitable means to effect the liberation of the escape-wheel *c* or its anchor *b* by the electro-magnet, to provide for the clock-work motor C shooting the bolt A; but the bringing of the magnet D into play for such purpose is here represented as effected automatically, and at any given period in the day, by a time clock or piece, of which G may represent the striking-wheel, and a circuit closer or opener controlled by said wheel. Thus H H is a circuit-closer in the circuit *e f*, which, as a projection, *r*, on the wheel G comes round, completes the circuit by passing between and in contact with the circuit-closer H H.

The projection *r* may be adjusted on the wheel G to thus close the circuit at whatever hour or period it may be desired to shoot the bolt A.

Instead of the striking-wheel of the clock-movement operating the circuit closer or opener, any other part of the hour-movement of the time-clock, or any special wheel revolving, say, only once in twenty-four hours, and actuated by the hour-movement of the time-clock, may be used. When said circuit closer or opener, however, is actuated by the striking-wheel of the clock, and it is only required to shoot the bolt at night, or once in twenty-four hours, then the circuit may be opened or closed in any other place, by hand or otherwise, to interrupt or prevent the shooting of the bolt at a corresponding period in the run of the striking-wheel during the day, or once in twelve hours, and so that said striking-wheel will only operate the circuit closer or opener controlled by it once in twenty-four hours.

When it is required to shoot the bolts of a series of locks simultaneously, either by opening or closing the circuit by hand or by the operation of a time-piece, then one of said bolts has either directly or indirectly connected with it a circuit closer or opener, which, as said bolt is shot, serves to complete or break a circuit in which the other bolts are arranged, and so that the clock-work motors of these last-named bolts will be liberated to shoot their respective bolts; or each bolt may have directly or indirectly connected with it a circuit closer or opener for operating successively two or more locks—that is, one bolt by the other for any number of bolts. Thus the bolt A, when shot, may strike and close a circuit-closer, M N, and complete the circuit by the wire *s*, with the electro-magnet of another lock operating to control the armature which liberates the anchor of the clock-work motor actuating said second lock, and so on for any number of locks in succession.

When it is not required to successively or simultaneously shoot all the bolts of a series of locks, then any one or more of said bolts may be cut out of the circuit by means of a special circuit closer or opener.

I claim—

1. The combination of a locking-bolt and its keeper, a clock-work motor operating to shoot said bolt, an adjustable stop for holding said clock-work in check, and an electro-magnet for operating said stop to release the clock-work, for the purpose of actuating or shooting the bolt, substantially as specified.

2. The combination of a circuit closer or opener with and for operation by the bolt of a lock when shot, clock-work mechanism for shooting said bolt, a stop for holding said clock-work in check, and an electro-magnet for operating said stop to release the clock-work mechanism which shoots or actuates the bolt, whereby a series of bolts may be simultaneously or successively operated, substantially as specified.

3. The combination, with the hour or striking movement of a time-piece, of a circuit closer or opener controlled by said movement, an electro-magnet in the same circuit as the circuit closer or opener of the time-piece, a stop controlled by said magnet, a clock-work motor held in check by said stop, and a bolt operated by said motor when the stop is released from its hold on the motor, essentially as described.

4. The combination of the adjustable stop E, the electro-magnet D, controlling said stop, the anchor *b*, with its arm *i* and a spring, *k*, the escape-wheel *c* of a clock-work motor, and the bolt A, operated by said motor, substantially as specified.

5. The combination of the circuit-closer M N with the bolt A and the clock-work motor C, having its release controlled by an electro-magnet, essentially as and for the purpose herein set forth.

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Witnesses:
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