(No Model.) 2 Sheets—Sheet 1.

A. GLAESER.

ELECTRIC DOOR OPENER.

No. 419,766. Patented Jan. 21, 1890.

Fig. 1.

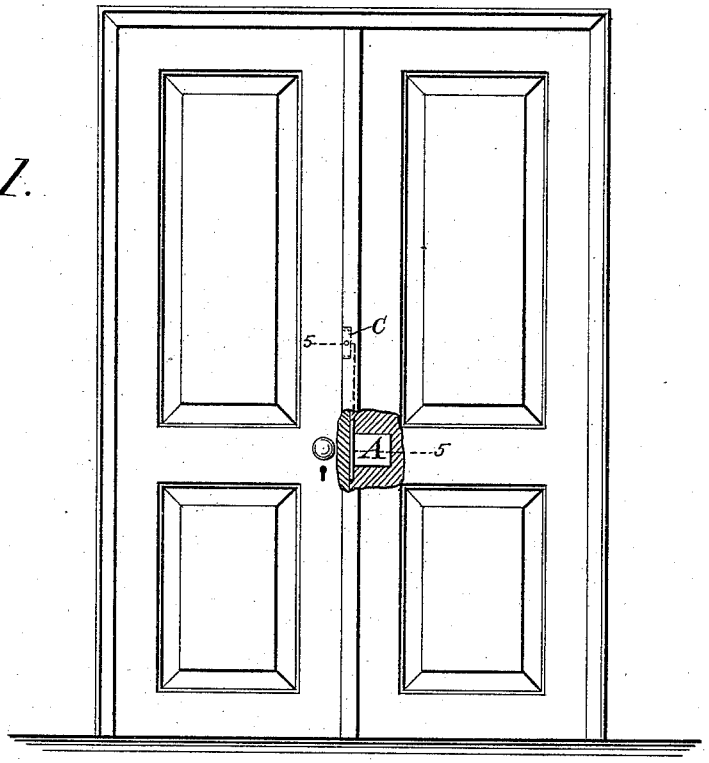


Fig. 3.

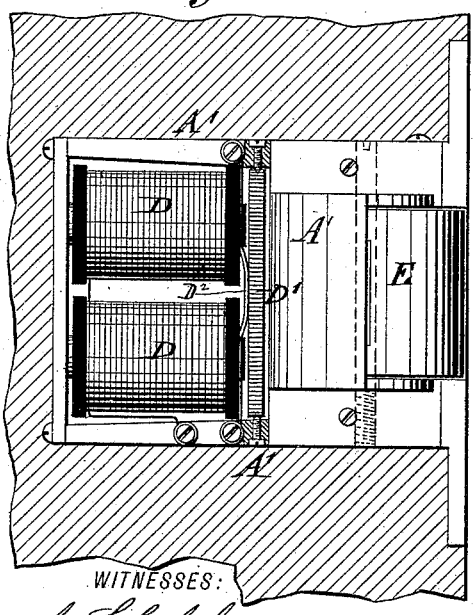
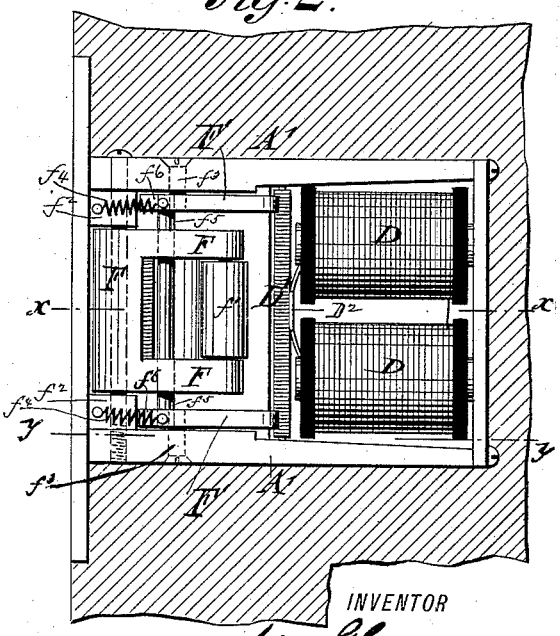


Fig. 2.



WITNESSES:

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INVENTOR

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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

A. GLAESER.

ELECTRIC DOOR OPENER.

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Fig. 4.

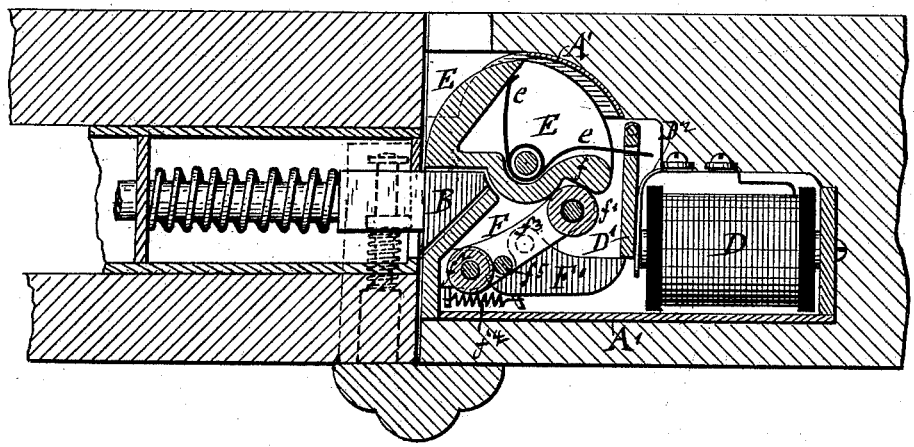


Fig. 5.

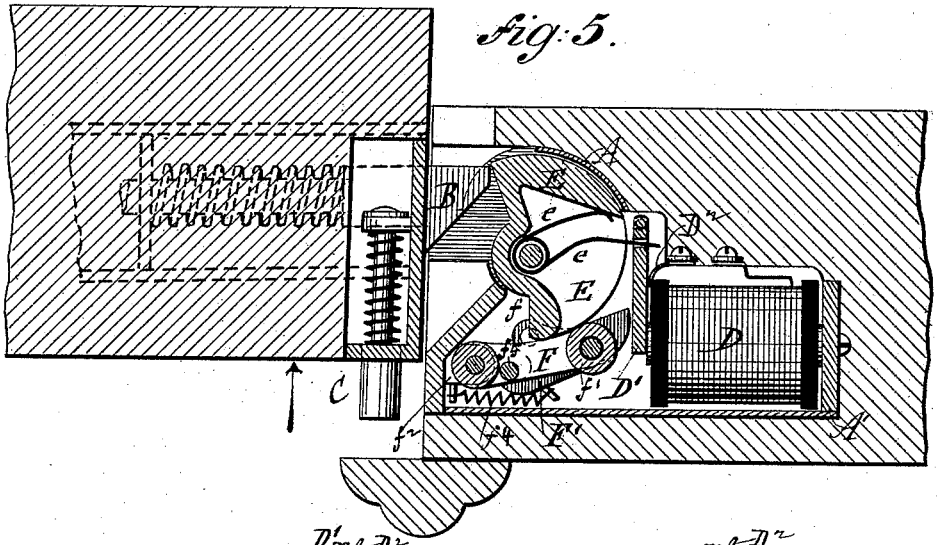
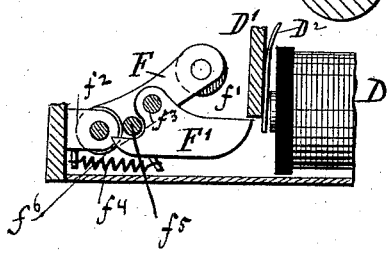


Fig. 6.



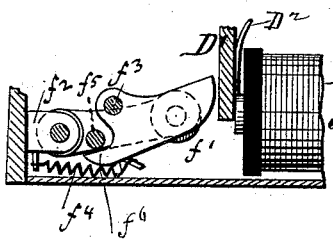


Fig. 7.

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UNITED STATES PATENT OFFICE.

ADO GLAESER, OF BROOKLYN, NEW YORK.

ELECTRIC DOOR-OPENER.

SPECIFICATION forming part of Letters Patent No. 419,766, dated January 21, 1890.

Application filed December 27, 1888. Serial No. 294,816. (No model.)

To all whom it may concern:

Be it known that I, ADO GLAESER, of Brooklyn, in the county of Kings and State of New York, a citizen of the United States, have invented certain new and useful Improvements in Electric Door-Openers, of which the following is a specification.

This invention relates to an electric door-opener for opening the main hall-door of flat and tenement houses, by which the door can be opened from any floor of the building in a reliable, simple, and effective manner; and the invention consists of an electric door-opener which is set into a recess of the fixed door-section or door-casing and worked in connection with the spring-bolt of the lock and a spring-pusher, the door-opener being provided with an oscillating and spring-actuated latch that is released when the armature is attracted by vitalizing an electro-magnet of the door-opener. A locking-lever frame having an anti-friction roller holds the latch in normally closed position, and is operated by pivoted spring-levers which abut against the armature when the same is not attracted by the electro-magnet. When the armature is attracted, the spring-levers and lever-frame release the latch and permit the oscillating of the latter out of the path of the spring-bolt of the door, so that the latter can be opened. The spring-levers are moved by a pin of the latch over the armature, so as to permit the inward motion of the latch for clearing the slide-bolt of the lock in responding to the spring-pusher of the door.

In the accompanying drawings, Figure 1 represents a front elevation of a hall-door to which my improved electric door-opener is applied. Figs. 2 and 3 are side elevations of the door-opener, drawn on a larger scale, and showing the same from opposite sides. Fig. 4 is a horizontal section of the door-opener and door-lock, showing the spring-bolt of the door-lock in locked position in the door-opener, the pusher, which is a plane above the door-opener and door-lock, being indicated in dotted lines. Fig. 5 is a horizontal section on line 5 5 of Fig. 1, showing the door-opener in open position and the pusher in full lines, the door-lock being indicated in dotted lines. Figs. 6 and 7 are detail horizontal sections on line *y y*, Fig. 2, showing the spring-levers operated by the locking-latch of the door-opener in connection with the armature.

Similar letters of reference indicate corresponding parts.

A in the drawings represents an electric door-opener, which is set into a mortise of the frame of the fixed section of a double door or into a mortise of the door-casing in case of a single door, and which works in connection with the spring-bolt B of the door-lock and a spring-actuated pusher C, which is arranged at any suitable part of the swinging door-section and adapted to push the same away from the fixed section or casing whenever the latch of the electric door-opener is released from its locking-lever.

The door-opener A is operated by an electro-magnet D, which is attached to the box or casing A′ of the door-opener and connected by conducting-wires in the usual manner with a battery and a number of push-buttons in the different stories of the building. An armature D′ is pivoted to the casing A′ in front of the pole ends of the electro-magnet and attracted by the same whenever it is vitalized by the close of the battery-circuit on pressing one of the push-buttons. A spring D tends to swing the armature out of contact with the electro-magnet when the latter is demagnetized. In front of the armature D′ is pivoted to the casing A′ an oscillating latch E of semicircular shape, which is actuated by a strong spring *e*, that is set into a recess of the latch, one end acting on the same, while the other end is inserted into an aperture of the armature D′. The base of the semicircular latch E is provided with a notch *f*, which is engaged by a locking-latch F. This locking-latch is preferably constructed in the form of a rectangular lever-frame, which is pivoted to lugs f^3 of the base A and is preferably provided with an anti-friction roller f' at its free end. This locking latch or lever is also provided near its pivot with a stud or studs f^5. An auxiliary lever F′ is pivoted on a stud f^3 of the wall of the casing A′, between said casing and the locking-latch F, and on a plane parallel with said locking-latch two of such auxiliary levers being shown at opposite sides of the casing. The free end of the auxiliary lever is adapted to engage the free end of the armature, and a hook f^6, near the pivot of the

lever, engages the stud f^5 of the locking-latch F. A contractile spring f^4 is connected at one end to the auxiliary lever and at the other end to one of the lugs f^3. The tendency of this spring is to pull forward the auxiliary lever F′, whereby its free end may be engaged by the armature, and its hooked end, which engages the stud f^5 of the locking-latch, may force said latch in upward position to engage the notch of the oscillating latch E.

The operation of the door-opener is as follows: The door being closed, the parts of the door-opener are in the relative positions shown in Fig. 4. When the circuit is closed by any one of the push-buttons on the different stories, the armature is attracted by the electro-magnet and its free end slides out of engagement with the auxiliary levers F′ and releases the latter. The force of the spring-pusher C is greater than the combined forces of the springs e and f^4, and consequently the outward pressure of the bolt B of the door-lock turns the oscillating latch E, whereby said bolt is released from the locking action of said latch and the door swung slightly open, as shown in Fig. 5. The turning of the oscillating latch E swings outward the locking-latch F and the anti-friction roll f' rides out of the notch f. The outward swing of the locking-latch F causes the stud f^5 to force inward the auxiliary lever or latch F′. When the door is fully opened, the latch B passes out of contact with the oscillating latch E, and the springs e and f^4 restore the mechanism of the door-opener to the position shown in Fig. 4. When the door is closed, the beveled face of the latch B of the door-lock comes in contact with the curved surface of the oscillating latch, and said bolt is forced inward until the door is fully closed. The spring of the bolt then forces it outward into engagement with said latch, as shown in Fig. 4. It thus appears that by the co-operation of the door-opener and the door-pusher the door is readily opened in an automatic manner. In closing the door the spring of the pusher is compressed again, and thus the power stored up for opening the door whenever the door-opener is actuated, and the latch of the same released from the spring-bolt of the lock. The door-opener is comparatively simple in construction and reliable in action, it being formed of a small number of parts, which produce by the joint action of the armature, auxiliary levers, and locking lever-frame a reliable locking action for the latch of the door-opener and the spring-bolt of the door-lock, while the locking action on the latch is released as soon as the armature is attracted by the vitalizing of the electro-magnet of the door-opener.

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

1. The combination of a casing, an electro-magnet, a spring-pressed armature, an oscillating latch, a locking-latch for engaging said oscillating latch, provided with a lateral stud, an auxiliary latch pivoted to said casing on a plane parallel with the locking-latch, one end of said auxiliary latch engaging said armature and the other end being provided with a hook for engaging said stud, and springs for actuating said oscillating and auxiliary latches, substantially as described.

2. The combination, in an electric door-opener, of an electro-magnet, a spring-pressed armature pivoted in front of the same, a spring-actuated latch pivoted to the casing of the door-opener and provided with a recess in its base, a pivoted locking-lever frame having an anti-friction roller at the outer end and a transverse pin near the pivot of the same, and spring-actuated auxiliary levers pivoted to the casing of the door-opener and engaging by hook-shaped ends the transverse pin of the locking-lever, said auxiliary levers abutting against the armature when the same is in normal position and passing clear of the armature when it is attracted by the electro-magnet, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

ADO GLAESER.

Witnesses:
PAUL GOEPEL,
JOHN A. STRALEY.