C. E. LINDIG.

AUTOMATIC DOOR RELEASING DEVICE.

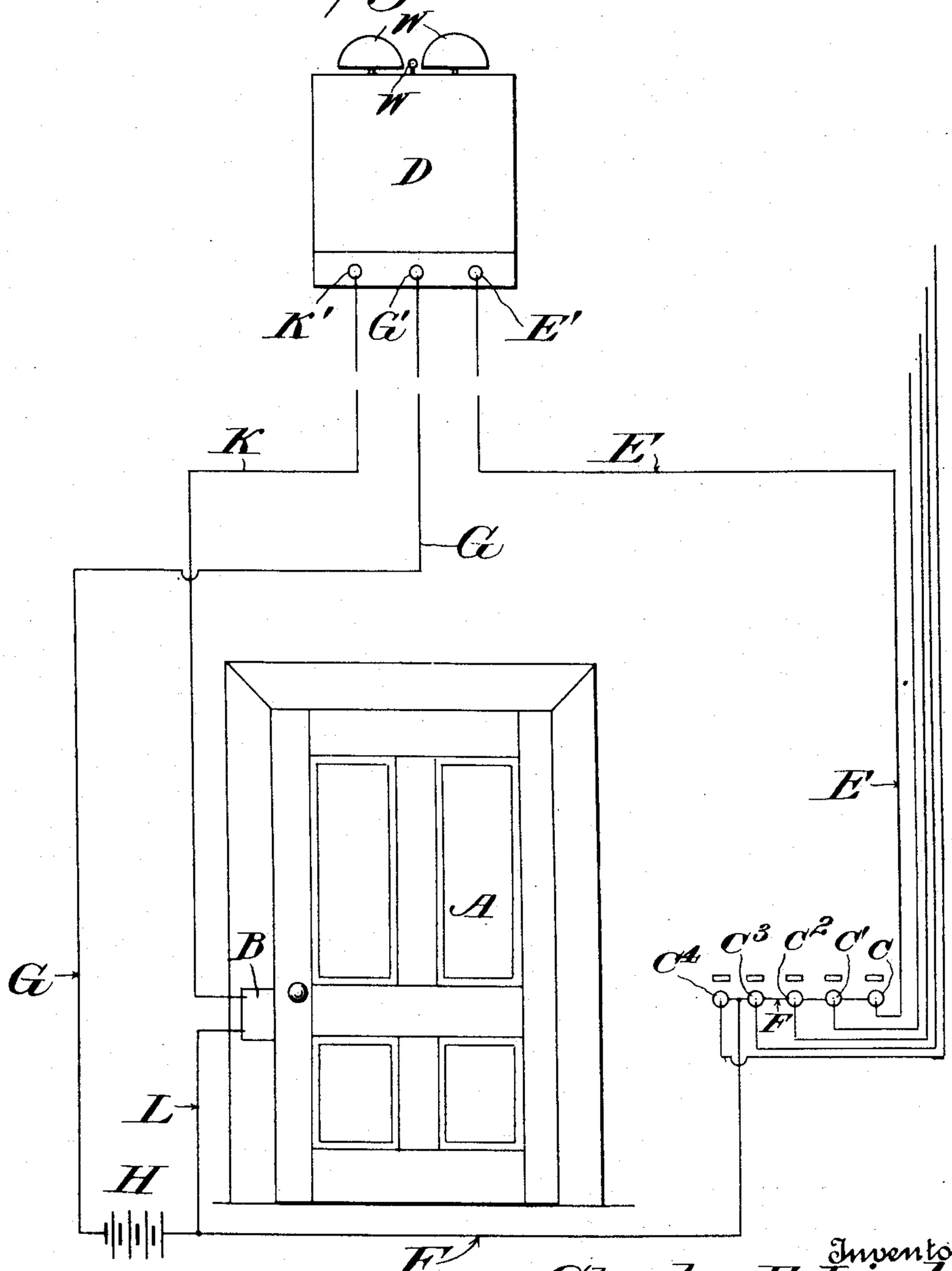
APPLICATION FILED JAN. 18, 1915.

1,167,085.

Patented Jan. 4, 1916.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses

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2 SHEETS—SHEET 2.

Fig. 2.

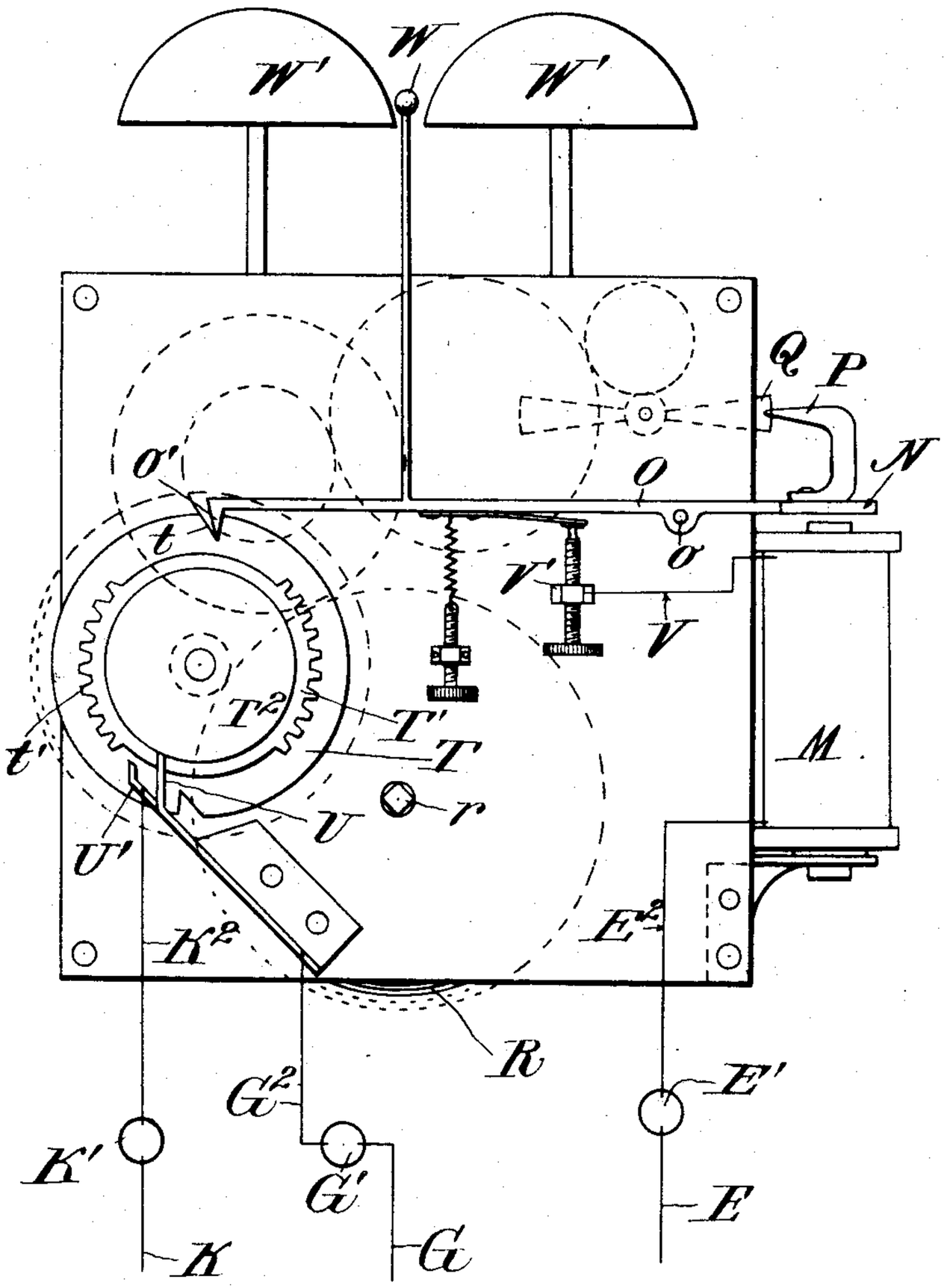
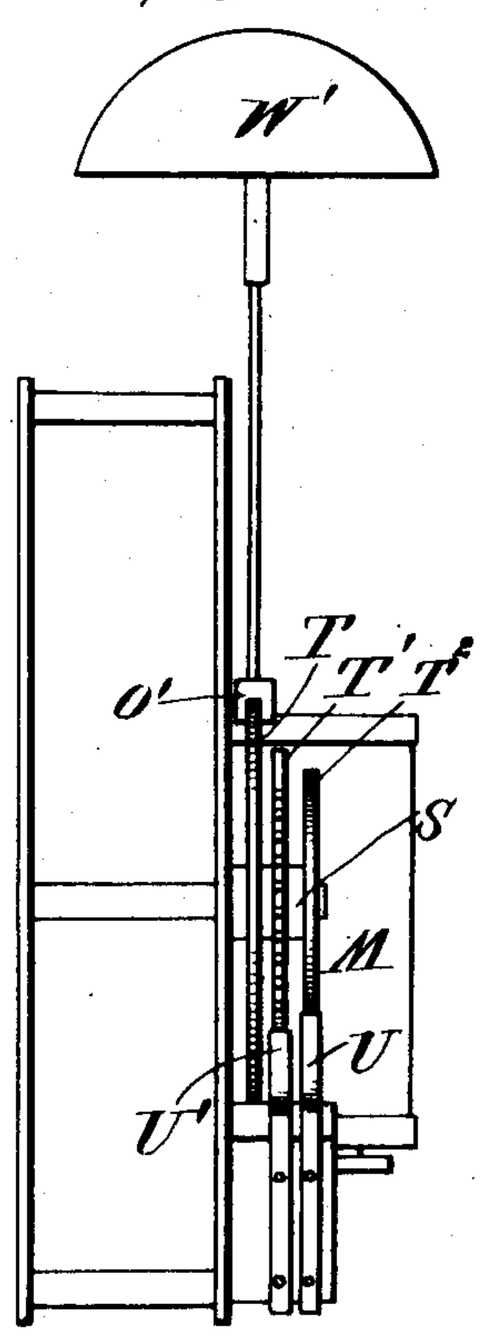


Fig. 3.



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UNITED STATES PATENT OFFICE.

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AUTOMATIC DOOR-RELEASING DEVICE.

1,167,085. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed January 18, 1915. Serial No. 2,923.

To all whom it may concern:

Be it known that I, CHARLES E. LINDIG, a citizen of the United States, residing at New York, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Automatic Door Releasing Devices, of which the following is a full, clear, and exact specification.

This invention relates to electrically operated door releasing devices such as are used in apartment houses for unlocking the vestibule doors from any of the apartments.

It is common practice to place in the vestibule of an apartment or flat house, a series of call buttons for operating bells in the several apartments or flats, and to place in each apartment or flat a button for operating a bolt releasing device on the vestibule door. A caller steps into the vestibule and presses the call button of the apartment to which he desires access, thereby ringing the bell in said apartment and thus notifying the occupants thereof that some one is waiting in the vestibule for admittance. The occupants must then press the button which operates the door opener in order to admit the caller into the hall, after which the entrance door to the individual apartment must be opened when the caller has reached it. It has been found to be somewhat of a nuisance for the occupants of apartments to have to stop and go to the door releasing button every time their call bell is rung, and it is the object of my present invention to provide automatic means for operating the door releaser each time the call bell is rung, thereby saving the occupants of the apartment from the necessity of pressing a button for this purpose.

Other objects will appear as the description proceeds.

The invention will be first hereinafter described in connection with the accompanying drawings, which constitute a part of this specification, and then more specifically defined in the claims at the end of the description.

In the accompanying drawings, wherein similar reference characters are used to designate corresponding parts throughout the several views: Figure 1 is a diagrammatic view showing the circuits from a series of call buttons in the vestibule and automatic door releaser on the door to the combined alarm and circuit closer, one of which is arranged in each apartment. Fig. 2 is a front view of the interior works of the combined bell and circuit closer, and Fig. 3 is a side view of the apparatus illustrated in Fig. 2.

In Fig. 1, A designates the inner vestibule door of an apartment house equipped with a door releaser B of any suitable known type, while C, C′, C^2, C^3 and C^4 indicate the call buttons for five apartments, which buttons are arranged in the vestibule. The automatic alarm and circuit closer for one of the apartments is designated D in Fig. 1. Inasmuch as the circuits from all of the call buttons to the circuit closers and bells in the several apartments, and from said circuit closers and bells to the door releasing device on the vestibule door are the same, the circuits to and from one of said circuit closers and bells are sufficient to illustrate them all, and the circuit from the call button C to the circuit closer D, and the circuit from said circuit closer to the door opening device B are, therefore, all I have deemed it necessary to show in the drawings. The circuit from the call button C to the combined alarm and circuit closer D, for automatically operating the door releaser B when said call button is pushed, includes the wire or conductor E from the call button to a binding post E′ on said circuit closer, and wires or conductors F and G from opposite poles of a battery or generator H, connected respectively to the call button C and to a binding post G′ on the circuit closer. The circuit from the circuit closer D to the door releasing device B includes a wire or conductor K leading from said door releasing device to a binding post K′ on the casing of the circuit closer, and the wires or conductors L and G from opposite poles of the generator H to the door releasing device B and the binding post G′, respectively.

Referring now to Figs. 2 and 3, M designates an electric magnet and N the armature thereof which is made as a part of a lever O which is pivoted at *o* and has a tooth *a′* at its opposite end for a purpose to be presently explained. To the armature N, there is connected a hook P which normally extends into the path of a fan Q constituting a part of an ordinary spring motor of the clock movement type which also includes a power spring R adapted to be wound up by means

of a key (not shown) applied to the stud r in the usual way. One of the shafts of the motor is extended and carries on its projected portion S a notched disk T, an interrupted gear T′ and a smooth disk T², all of which are adapted to turn with said shaft. The tooth o' on the lever O normally rests in or engages one of the notches t in the periphery of the disk T. A contact piece or brush U engages the periphery of the smooth disk T² at all times, while another contact piece or brush U′ extends into the path of the interrupted teeth or cogs t' on the interrupted gear T′, but stands away from the body of the gear between said teeth or cogs. A wire or conductor E² leads from the binding post E′ to the magnet M, and a wire or conductor V leads from the magnet to a vibrator V′ which is in contact with the lever O. A wire or conductor G² connects the binding post G′ to the contact piece or brush U, which is in contact with the smooth disk T². The lever O carries a clapper W adapted to strike the gongs W′ when the circuit is closed through the magnet M. This circuit is closed each time the call button C is pressed and may be traced from said call button through wire E to binding post E′, through wire E² to the magnet M, through wire V and vibrator V′ to lever O, through tooth o', disk T, shaft S and disk T² to brush U, through wire G² to binding post G′, through wire G to generator H and through wire F back to the call button C. When the circuit through the magnet is thus closed, the hook P is moved with the armature N so as to release the fan Q, and at the same time the tooth o' is raised out of the notch t in the disk T, whereupon the spring motor is set in motion and the shaft S bearing the disk T, interrupted gear T′, and disk T², starts to turn, thus moving the notch t from below the tooth o'. The motor will then be free to operate until the other notch t comes below the tooth o', said tooth being in the meantime supported on the periphery of the disk T and consequently holding the hook P on the other end of the lever O out of the path of the fan Q. As soon as the tooth o' drops into the other notch t of the disk T, the hook P will rise into the path of the fan and stop the motor. While the motor is in operation and the disk T is traveling a half revolution from one of its notches to the other, the interrupted gear T′ will also turn a half revolution and cause the section of teeth or cogs between the notches t, Fig. 2, to move past the contact piece or brush U′ which extends into the path of said teeth or cogs as already explained. Each time the contact piece or brush is engaged by one of the teeth or cogs, the circuit will be closed to the door releasing device B and the bolt of the vestibule door A released. This circuit to the door releasing device may be traced from said device through wire K to binding post K′, through wire K² to brush U′, through interrupted gear T′, shaft S and disk T² to brush U, through wire G² to binding post G′, through wire G to generator H, and through wire L back to the door releasing device B. The provision of a series of teeth or cogs between the notches t causes the door releasing device B to be operated several times at any one of which times the door may be opened just the same as if a controlling button were pressed several times as in the old arrangement hereinbefore mentioned. This intermittent operation of the door releasing device B makes a ticking sound which attracts the caller's attention, so that he can easily open the door during one of the series of periods when the circuit for operating said door releaser is closed. While I have shown only two notches in the disk T, it will be understood that any number may be used that may be found to best suit the requirements in each case. The number of teeth or cogs in each group on the interrupted gear T′ may also be varied, if desired.

The invention may be used to advantage in a doctor's office as well as in an apartment house, the door releasing device B being attached to the door of the waiting room in that instance, so that callers may be admitted without necessitating the doctor or his assistant stopping to go to the door. At the same time, the doctor will be notified by the ringing of the bell when any one comes in. When the invention is used in apartment houses, it will be found to be a security against burglars, for the door releasing device will be operated to release the vestibule door whether there is any one at home or not and the burglar will, therefore, be afraid to attempt to force open the individual doors to any of the apartments, whereas under the old arrangement, if he pressed a call button and received no response, he would know that nobody was at home in that particular apartment and that he could force an entrance without interference.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. The combination with a door releasing device and a call bell, of means for automatically operating said door releasing device a plurality of times after the bell is rung.

2. The combination with a door releasing device and a call bell, of a motor to be set in motion when the bell is rung, and means operated when said motor is running and after the bell has been rung for automatically actuating said door releasing device.

3. The combination with a door releasing device and a call bell, of a motor to be set in motion when the bell is rung, and means

for automatically actuating said door releasing device a plurality of times while the motor is running and after the bell has been rung.

4. The combination with a door releasing device, of a spring motor, means for starting said motor, and means for actuating said door releasing device when the motor is running.

5. The combination with a door releasing device, of a normally open circuit to said device, a spring motor having means for closing said circuit when running, and means controlled from outside the door for starting said motor.

6. The combination with a door releasing device, of a normally opened circuit through said device, a motor having means for closing said circuit when running, a push button outside the door, means for starting said motor, including an electric magnet, and a circuit from the button to the magnet.

7. The combination with a door releasing device, of a motor, a pair of disks connected up to run with said motor, one having a smooth uninterrupted periphery and the other having notches in its periphery, an interrupted gear also mounted to run with the motor, a brush engaging the periphery of the smooth disk, another brush extending into the path of the teeth on the interrupted gear, a circuit from the door releasing device including said brushes, a movable stop normally engaging one of the notches in the notched disk, and means for removing said stop from the notch for the purpose specified.

8. The combination with a door releasing device, of a motor, a pair of disks connected up to run with said motor, one disk having a smooth uninterrupted periphery and the other disk having notches in its periphery, an interrupted gear also mounted to run with the motor, a brush engaging the periphery of the smooth disk, another brush extending into the path of the teeth on the interrupted gear, a circuit from the door releasing device including said brushes, a movable stop normally engaging one of the notches in the notched disk, a call button outside the door, an electric magnet, an armature therefor connected to said stop and adapted to move the latter out of the notch in the notched disk when said armature is drawn to the magnet, and a circuit from the button to the magnet for energizing the latter when the button is pressed.

9. The combination with a door releasing device, of a motor, means for actuating said door releasing device when the motor is running, an electric magnet, an armature therefor, a stop mounted on the armature for normally retaining the motor from running, a button outside the door, and a circuit from the button to the magnet for energizing the latter when the button is pressed and releasing said stop when the armature is drawn to the magnet.

10. The combination with a door releasing device, of a motor, means for actuating said door releasing device when the motor is running, an electric magnet, a bell, a lever, a clapper carried by said lever, an armature attached to the lever, a vibrator also attached to the lever, a stop mounted on the armature for normally retaining the motor from running, a button outside the door, and a circuit from the button to the magnet for energizing the latter when the button is pressed for simultaneously releasing the motor from the stop and ringing the bell.

In testimony whereof I have signed my name to this specification in the presence of two attesting witnesses.

CHARLES E. LINDIG.

Witnesses:
WM. M. CHRISTIE,
A. HAEGEN.