

S. H. CURWEN.
ELECTRIC RELEASING DEVICE FOR DOORS.

No. 518,877.

Patented Apr. 24, 1894.

Fig. 1.

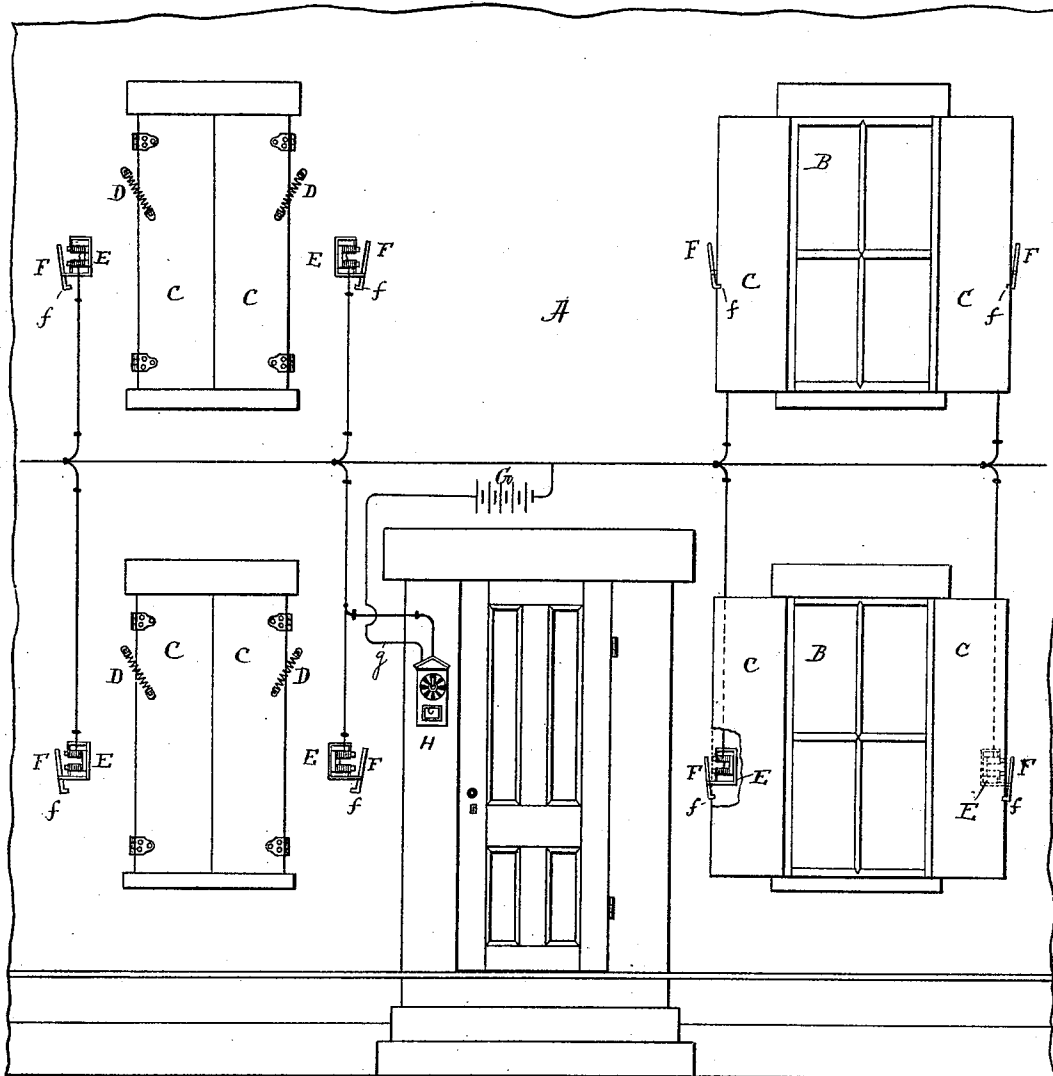
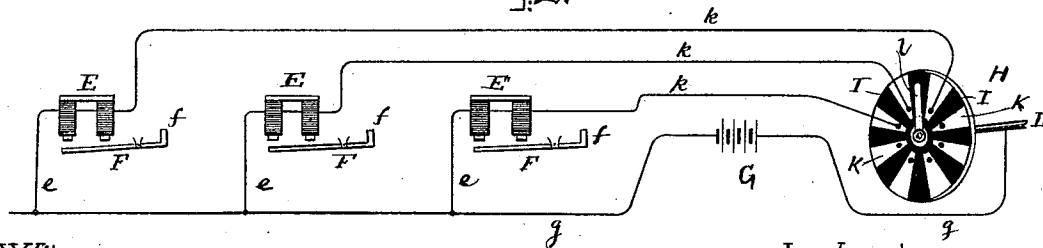


Fig. 2.



Witnesses.

Linnitt, W. Möller.
Alice A. Perkins.

Inventor.

Samuel H. Curwen
by
Wm. C. Cullen Esq.

(No Model.)

4 Sheets—Sheet 2.

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Fig. 5

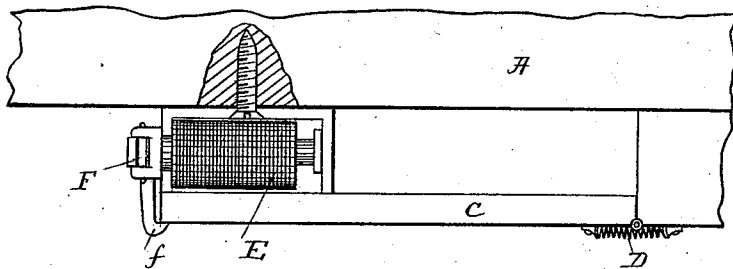
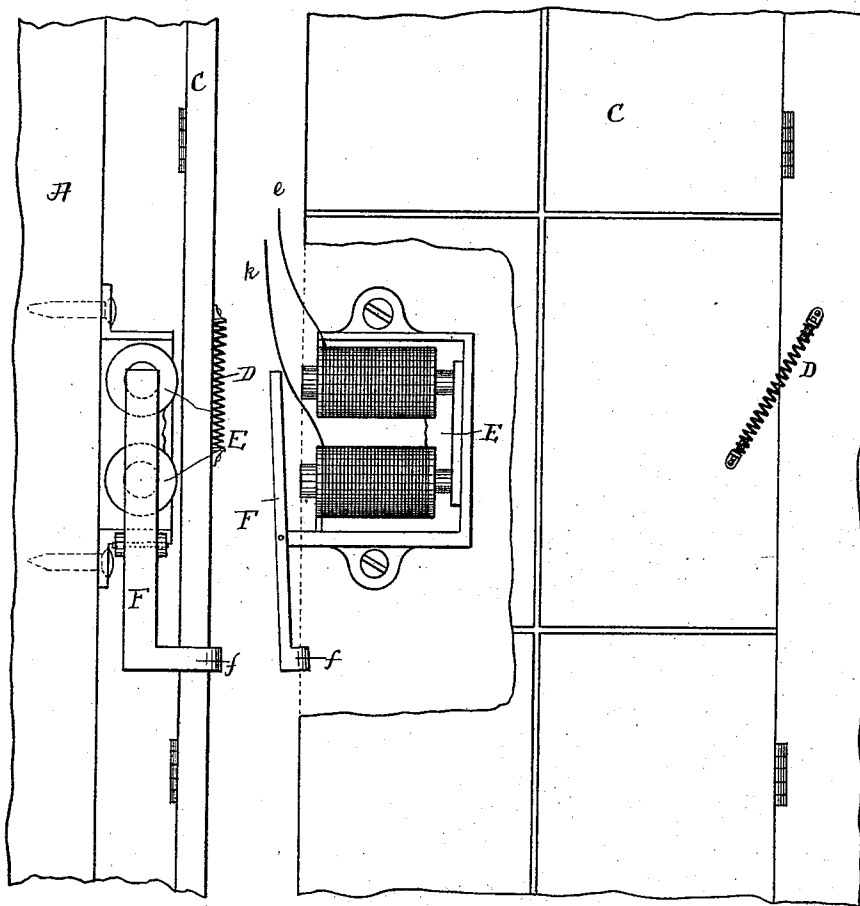


Fig. 4.

Fig. 3.



Witnesses.

Lamont W. Miller.
Alice A. Perkins.

Inventor.

Samuel H. Curwen
by *Alban Andrieu*
his atty.

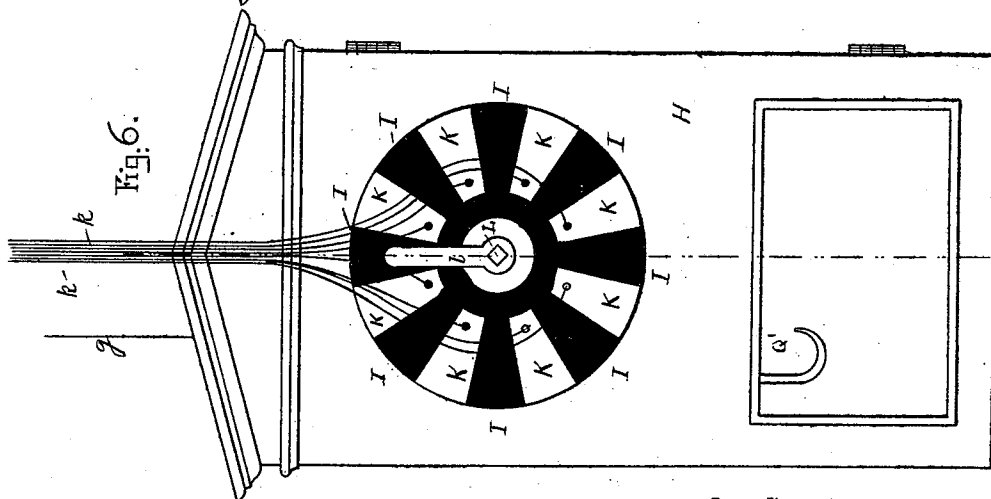
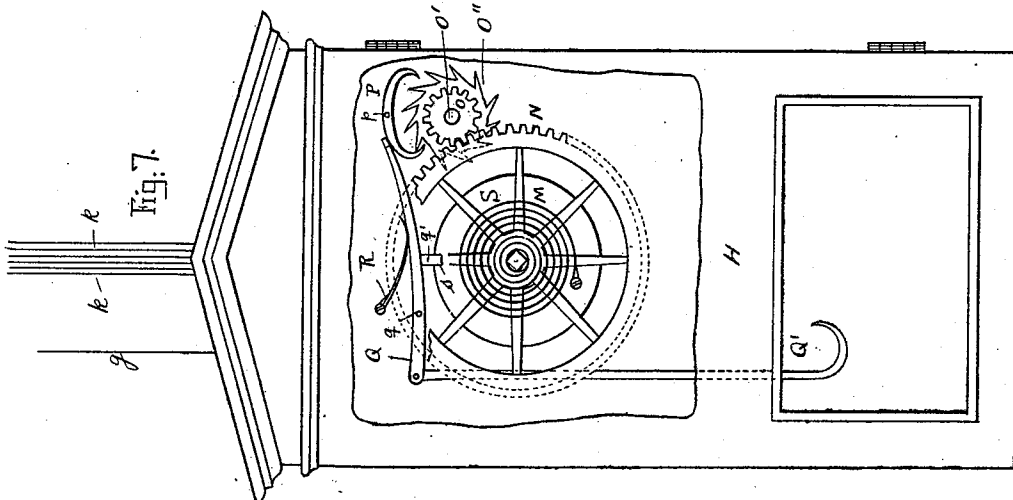
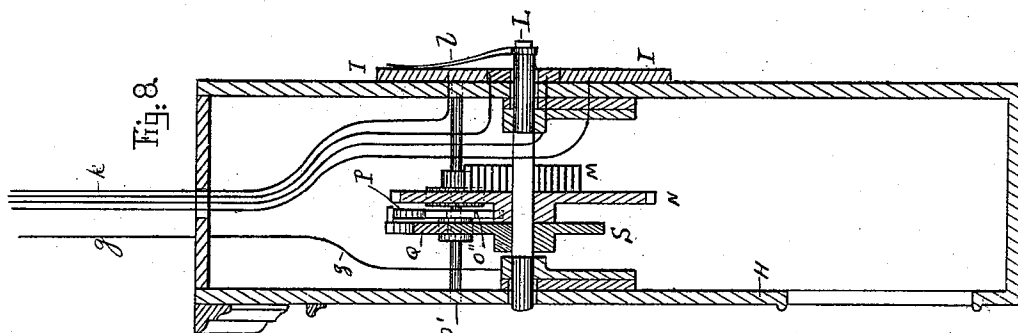
(No Model.)

4 Sheets—Sheet 3.

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Witnesses.

Lauritz W. Möller.
Alfred A. Perkins.

Inventor.

Samuel H. Curwen
Alban Fredrick
his atty

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Fig. 9.

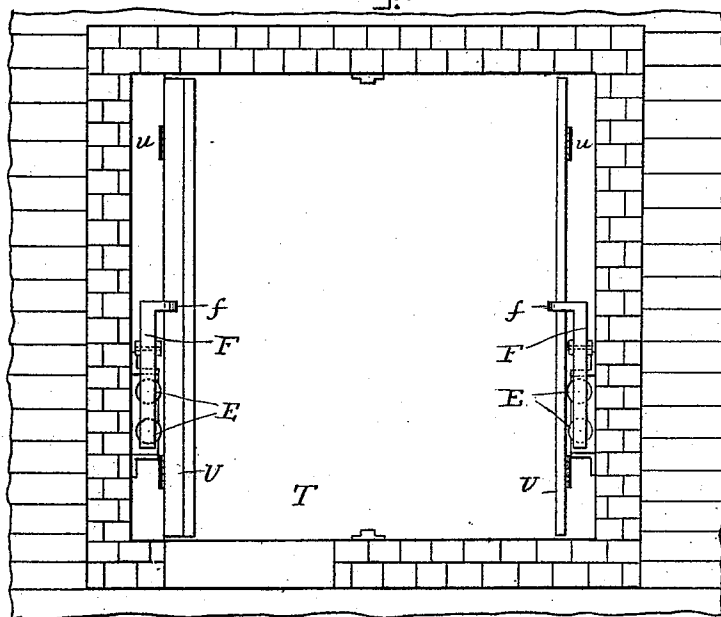
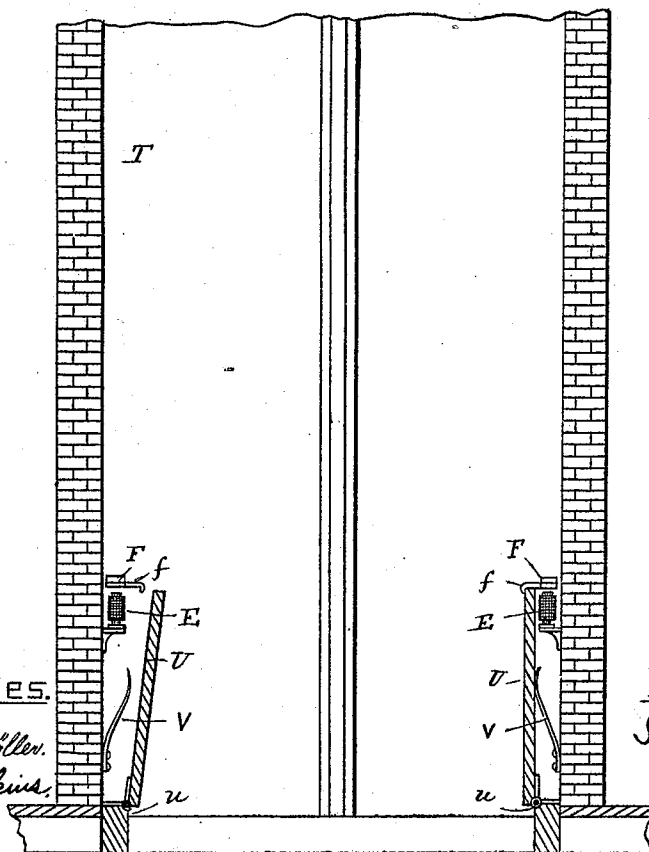


Fig. 10.



Witnesses.

Lauretta C. Mollen.
Alie A. Perkins.

Inventor.

Samuel H. Curwen
by Allan Andrieu
his atty.

UNITED STATES PATENT OFFICE.

SAMUEL H. CURWEN, OF SALEM, MASSACHUSETTS.

ELECTRIC RELEASING DEVICE FOR DOORS.

SPECIFICATION forming part of Letters Patent No. 518,877, dated April 24, 1894.

Application filed July 12, 1893. Serial No. 480,198. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. CURWEN, a citizen of the United States, and a resident of Salem, in the county of Essex and State of Massachusetts, have invented new and useful Improvements in Electric Releasing Devices for Automatically Closing Doors, Shutters, &c., of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to improvements in electric releasing devices for automatically closing doors, shutters, &c., in buildings and it is particularly designed for the purpose of closing doors, shutters, elevator wells and other openings in buildings in case of fire or at the close of business as the case may require, and it is carried out as follows reference being had to the accompanying drawings, wherein—

Figure 1 represents a front elevation of a building provided with my improved electric releasing and closing device. Fig. 2 represents a diagram showing the battery circuit breaker, and connecting wires to the electro magnets in the series. Fig. 3 represents a detail front elevation of one of the doors or shutters and its electro magnet. Fig. 4 represents an edge view of the same. Fig. 5 represents a top view of the same. Fig. 6 represents a detail front view of the circuit breaker. Fig. 7 represents an interior view of the same. Fig. 8 represents a vertical section on the line 8—8 shown in Fig. 6. Fig. 9 represents a top plan view of an elevator well and its floor hatches; and Fig. 10 represents a vertical section on the line 10—10 shown in Fig. 9.

Similar letters refer to similar parts wherever they occur on the different parts of the drawings.

A in Figs. 1, 3, 4 and 5 represents the outer wall of a building having windows or openings B, B provided with fire-proof or fire resisting shutters C, C of any well known construction or material. In the drawings I have shown said shutters as being hinged and capable of being swung from closed to open positions but I desire to state that my improvement is equally well adapted to sliding shutters or doors without departing from the essence of my invention. The said doors or

shutters may be provided with any suitable means for causing them to close automatically when released and I have for this purpose shown springs D, D in Figs. 4 and 5 and in Figs. 1 and 3 which may be of any well known form or construction or if so desired instead of springs may be used suitable weights or gravity devices according to the construction, location and arrangement of said doors or shutters.

The electric releasing device used in connection with the self-closing doors or shutters consists of an electro-magnet E secured to the wall of the building or other object at or near the edge of the door or shutter when in its open position as shown in the drawings. Each electro-magnet is provided with a pivoted rocking armature lever F, having a lip or hook or projection *f*, adapted to hold the door or shutter open as shown in Figs. 1 and 2 and in detail in Figs. 3, 4, and 5.

G in Fig. 2 represents a battery or electric current generator connected by wires to and through the electro-magnets in the circuit and to a circuit breaker and closer or interrupter as will be more fully shown and described. It will be thus seen that when the circuit through each electro-magnet is closed its armature lever is attracted toward the electro-magnet causing the lip or hook *f* on said armature lever to be disengaged from the door or shutter and as the latter is thus liberated it is automatically closed by the influence of the self-closing device or its equivalent as shown and described.

When the house or building contains a great many doors or shutters, &c., it would require a very strong battery or current generator for the purpose of closing all such doors or shutters, &c., simultaneously, and therefore for the purpose of utilizing a comparatively weak battery or current generator I introduce in the circuit a current breaker and closer or interrupter which when actuated will automatically close the current intermittently and successively through the individual electro-magnets in the series so as to cause the doors or shutters, &c., in the series to be successively released, one independently of the others as will hereinafter be described. In Figs. 6, 7 and 8 I have shown in detail such current breaker and closer and it con-

sists of a case or box H having a stationary face or disk composed of alternate non-conducting and metallic segments I and K; each metal plate K is connected by means of a wire *k* to its corresponding electro-magnet E as shown in Fig. 2.

e is a branch wire leading from each electro-magnet to the return wire *g* leading to and through the battery G and metallicall
10 connected in a suitable manner to a spindle L journaled in suitable bearings in the case H and projecting through the front of the latter and there provided with a yielding metal brush or sweeper *l* adapted to be brought
15 alternately in contact with the respective non-conducting and metal segments I and K during the rotation of said spindle and its sweeper.

In connection with the spindle L any suitable spring or weight actuated clock mechanism may be employed for the purpose of causing said spindle and its sweeper when released to be rotated one revolution around its axis, and I have for this purpose shown
25 in Figs. 6, 7 and 8 a coiled clock spring M secured to the spindle L and to the case. On said spindle is also secured a spur gear N meshing in a pinion O secured to a spindle O' on which is also secured an escapement
30 wheel O''.

P is the escapement lever pivoted at *p*, and adapted to normally hold the escapement wheel from rotation by the influence of a spring pressed lever Q pivoted at *q* and held
35 against the escapement lever P by means of a yielding spring R as shown in Fig. 7. The lever Q has a tooth or projection *q'* adapted to fit in a notch or recess *s* on a disk S secured to the spindle L as shown in Fig. 7.

Q' is a preferably hooked rod connected in its upper end to the lever Q.

From the above it will be seen that when the hooked rod Q' is pulled down the tooth *q'* is disengaged from the notch *s* in the disk S at the same time as the escapement lever P is released from the end of the lever Q allowing the spindle L to rotate and causing its
45 sweeper *l* to be intermittently brought in contact with the non-conductive and metallic surfaces I, K thus causing the electric current to be successively closed through the electric magnets in the series for the purpose stated. As the spindle L and its sweeper *l* reaches the end of a complete revolution the tooth *q'* on the lever Q is caused by the influence of the
50 spring R to drop into the notch *s* on the disk S thus arresting the rotation of said spindle and sweeper until the hooked rod Q' is again pulled and so on.

In Figs. 9 and 10 I have shown the electric releasing device as applied to hatches in an elevator well; and in said figures T represents an elevator well having hatches U, U pivoted at *u*, *u* and preferably adapted to be swung beyond their individual center of gravity when released by the influence of springs V, V as shown in Fig. 10. In connection with said hatches are used electro-magnets E and hooked armature levers F, *f* of the same kind as those heretofore shown and described for
60 holding and releasing doors, shutters, &c.

In case of fire or for any other purpose when it is desired to close the wall openings in a building it is only necessary with my invention to pull the hooked rod Q' when the electric current is successively closed through the electro-magnets causing the doors, shutters, hatches, &c., to be released and closed automatically by a suitable closing device which may be a spring or weight or gravity
75 of the hatch, &c., itself as the case may be.

Instead of connecting the electro-magnets to a battery or current generator arranged in the building, they may be electrically connected to any suitable source of electric
85 power such as electric light or power wires, &c., as may be most practicable or convenient.

Having thus fully described the nature, construction, and operation of my invention, I wish to secure by Letters Patent and claim—
90

The combination with a series of automatically closing shutters or doors, of a main line having interposed therein a current generating device, a series of branch circuits each including an electro-magnet controlling an
95 armature acting to hold the shutter or door open, a circuit closer interposed between the main line and the branch circuits consisting of a stationary disk provided with a number of insulated contact points each connected
100 with one of the branch circuits, a contact arm adapted to successively contact with the insulated contact points, a mechanical motor for rotating said contact arm, and a pivoted lever normally holding said motor against rotation
105 but permitting, when released, one complete revolution of the said contact arm, substantially as shown and described and for the purpose specified.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 1st day of July, A. D. 1893.

SAMUEL H. CURWEN.

Witnesses:

ALBAN ANDRÉN,
DANIEL DALANY ADDISON.