

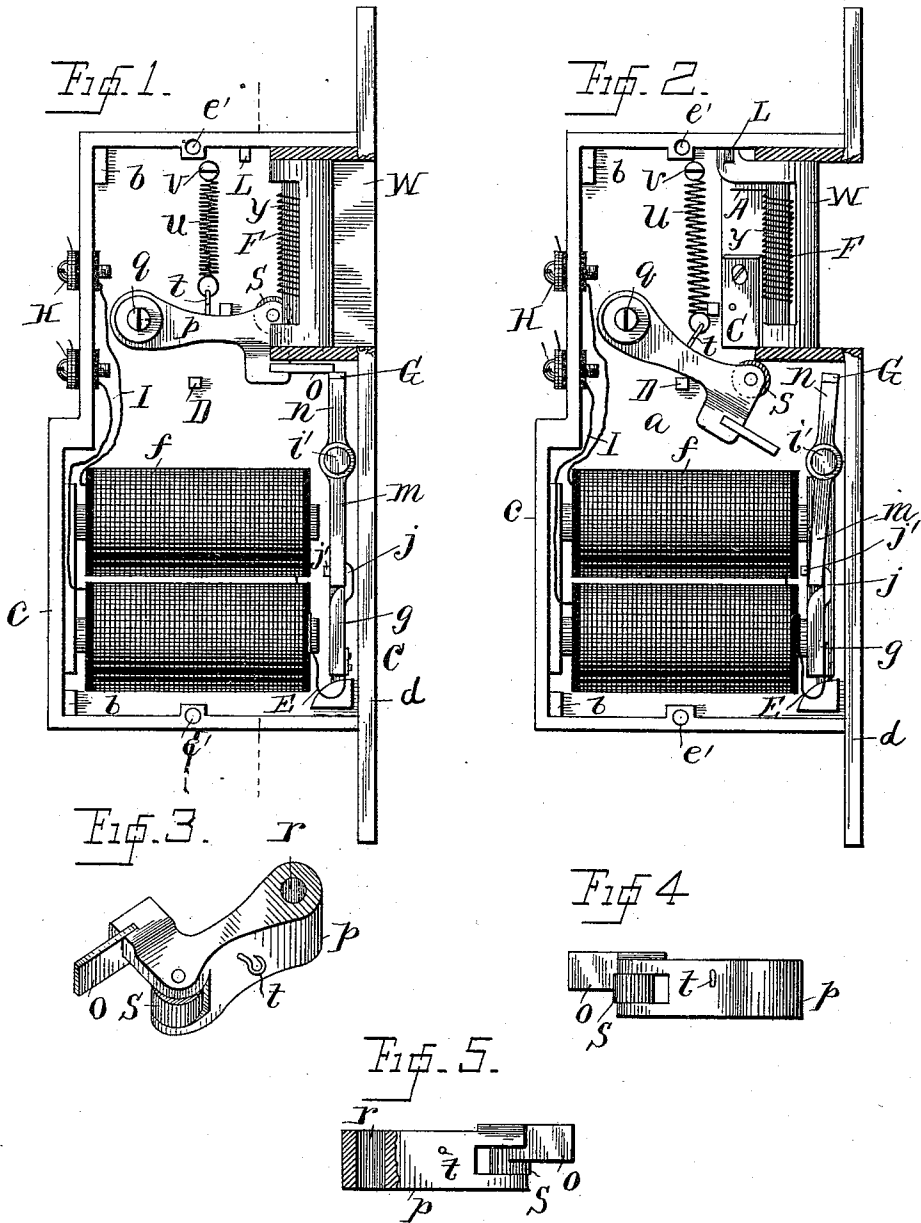
(No Model.)

2 Sheets—Sheet 1.

J. SCHNEIDER.
MAGNETIC LOCK.

No. 428,256.

Patented May 20, 1890.



WITNESSES
Will W. Courtland
Nellie L. Pope.

INVENTOR
JOHN SCHNEIDER
BY HIS ATTORNEY
Edward P. Thompson

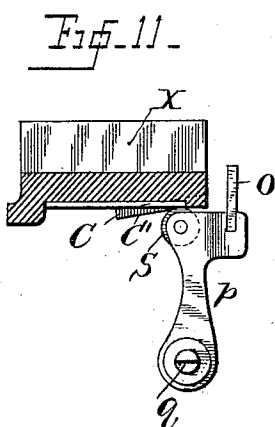
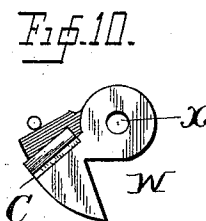
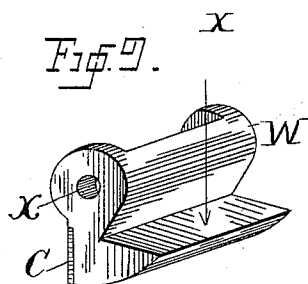
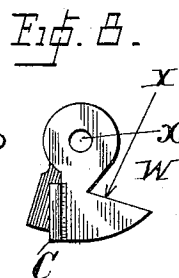
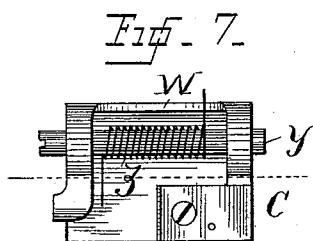
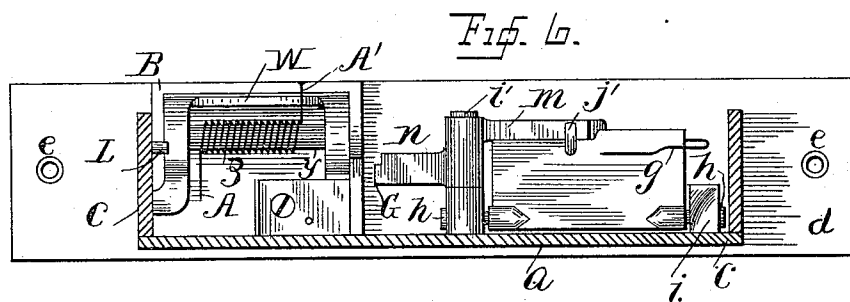
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UNITED STATES PATENT OFFICE.

JOHN SCHNEIDER, OF NEW YORK, N. Y.

MAGNETIC LOCK.

SPECIFICATION forming part of Letters Patent No. 428,256, dated May 20, 1890.

Application filed March 5, 1890. Serial No. 342,699. (No model.)

To all whom it may concern:

Be it known that I, JOHN SCHNEIDER, a citizen of the United States, and a resident of New York, county and State of New York, have invented certain new and useful Improvements in Electric Door-Openers, (Case No. 2,) of which the following is a specification.

My invention relates to the mechanical construction of a device for opening or unlocking a door from a distance by means of an electric current.

The object of the invention is to obtain simplicity of construction and an action which may be depended upon as operative in every instance.

All the details of the invention are shown in the accompanying drawings, in which—

Figure 1 is a plan of the interior of the electric door-opener, showing the mechanism thereof in its normal condition—i. e., when the door is shut or when the magnet is not energized. The top plate or cover of the device is entirely removed. Fig. 2 is a similar view showing the mechanism in an abnormal condition—i. e., while the door is being opened or while the magnet is energized by an electric current. Fig. 3 is a perspective view of a detail. Figs. 4 and 5 show those sides of said detail not shown in Fig. 3, Fig. 5 being partly in section. Fig. 6 is a view in elevation of the electric door-opener, showing the interior thereof as the back plate, magnet, and locking-lever are removed. The casing is shown in section. Figs. 7, 8, 9, and 10 are different views of the lock nose or latch, Fig. 9 being a perspective, and Figs. 8 and 10 showing the nose in, respectively, the normal and abnormal condition. In Fig. 7 the retractile spring and shaft or arbor of the nose are shown, while in Figs. 8, 9, and 10 they are omitted. Fig. 11 shows the nose in section and that detail seen in Figs. 3, 4, and 5, and which may be conveniently termed the "locking-lever," because when in the normal position it serves as the resistance which prevents the nose from moving.

The device embodying my invention consists of the combination of a base-plate *a*, provided with projections *b* at some of the corners pressing against the angle-frame *c*, which carries a suitable top plate or cover, (not shown, as it would hide the mechanism,) a

front plate *d*, having screw-holes *e*, forming a rectangular frame, in combination with the angle-frame *c*, screw-holes *e'* being provided in the frame *c* to receive screws for fastening the same to the plate *a*, a magnet *f*, attached to the frame *c* on its back plate and having the axes of its coils lying in a plane parallel to the plane of the base-plate, an armature *g*, pivoted before the poles of the magnet upon pivots *h*, which are secured to uprights *i* and *i'* on the base *a*, the said armature being pivoted so that the axis of rotation is parallel to a rectilinear line joining the ends of the magnet's poles, two projections *j* and *j'* upon the upper edge of the armature of that edge farthest from the armature's axis of rotation, a tripping-lever turning on the upper part of the upright *i'*, whose axis is perpendicular to the base *a*, the said lever having one arm *m* lying between the projections *j* and *j'* loosely, so that when the armature is attracted the tripping-lever will turn, which lever has a second arm *n*, which normally is substantially perpendicular to and presses upon the projection *o* of the locking-lever *p*, which is pivoted on the upright *q*, which passes through the hole *r* in said lever, a roller *s* upon the same end of said lever *p* as the projection *o*, a hook *t* on the lever *p*, engaging with the retractile spring *u*, whose opposite end is attached to an upright *v* on the base-plate *a*, a latch or nose *W*, which is rotary, being provided with a hole *x* for a small shaft or arbor *y*, and other details below described.

The arbor *y* is provided with a retractile spring surrounding the same in the hollow space of the nose, one end *A* of said spring being attached to the nose and the other end *A'* to the plate or nose-cover *B*, projecting upward from the angle-frame *c*. The axis of arbor *y* is in a plane which is parallel to and above the plane in which turns the lever *p*. The arrow *X* indicates the direction of force and the point of application of a nose on the door, assuming that the lock would be on the jamb. On the opposite side of the nose *W*, preferably of brass, is a plate *C*, of steel, having a surface in contact with the roller *s*, the said surface being inclined slightly—i. e., lying in a plane which is nearly, but not entirely, (about one degree difference,) coincident with the plane of the axis of the arbor *y*. The axis

of the roller *s* is parallel to said inclined surface of the plate *C*.

In the normal position of the device the lever *p* is at right angles to a plane passing through the axis of the arbor *y*, and also parallel to the axis *q*; but the surface of *C*, above alluded to as slightly inclined, acts as an inclined plane does in mechanics by causing the roller to roll off of the said surface when a sufficiently great force acts, as indicated by the arrow *X*, and when the arm *n* is released by the armature from pressing upon the projection *o*. This inclined surface is best seen in Fig. 11 and is lettered *C'*.

The operation is as follows: When the magnet *f* is energized by an electric current, the armature *g* is attracted thereto, rotating on the pivot *h*. The tripping-lever having arms *m* and *n* lies in substantially the same plane as the armature, which is flat; but its axis of rotation is perpendicular to the axis of the armature. The tripping-lever further, when turned very slightly, about one degree, slips away from pressing upon the projection *o*, so that the lever *p* will rotate and strike against the stop *D* if a sufficient force is exerted, as represented by the arrow *X*. It takes but little force of magnetic attraction to cause the arm *n* to slip away from the projection *o*, and only needs an instant of time, and yet in order to force open the door or to turn the nose *W* before the lever *p* is released requires more strength than two or three men. It depends upon the strength of the post or upright *q* principally, which is assisted also by the post or upright *v'*. The surface *C'*, being inclined, allows the lever *p* after release to turn without too great force, which is dependent upon the amount of inclination given. A retractile spring *E* is attached at one end to the armature and presses at the other end upon the magnet *f*, so that the armature will rebound when the current ceases. Similarly the spring *u* pulls back the lever *p* into its normal condition after the door is once unlocked, while similarly the spring *F* on the arbor *Y* returns the nose *W* to its proper position for the next action.

In order to produce lasting qualities, the projection *o* is steel and the arm *n* is tipped with a small piece *G* of steel.

The armature is attracted equally by both poles during its entire motion, due to the manner of pivoting the same. The terminals of the magnet are represented at *H*, which are connected electrically to the coils of the magnet by conductors *I*.

A stop *L* is provided to prevent the nose *W* from rotating too far. The tripping-lever is simultaneously an armature, being made of magnetic material, such as iron. This lever or armature is pivoted at right angles to the armature *g*.

The armature *g* is provided in addition to the armature having the arms *m* and *n*, so that both poles may have their full power of attraction employed, the armature *g* being at all times equally distant from the said poles.

I claim as my invention—

1. An electric door-opener consisting of the combination of a magnet and a rotary or swinging armature therefor, a rotary latch or nose *W*, a pivoted locking and roller lever *p*, pressing upon the back of said nose at an angle and provided with a projection *o* upon the same end as the roller, and a pivoted tripping-lever, whose axis is perpendicular to the armature's axis and parallel to the axis of said locking-lever, having one arm *n* pressing upon the projection *o* and the other arm *m* engaged with said armature.

2. In an electric door-opener, the combination of a rotary nose, a lever pressing at an angle upon said nose, and means for releasing said lever, said means consisting of two armatures pivoted at right angles to one another, and engaging with each other, one armature normally pressing upon the said first-named lever.

3. In an electric door-opener, the combination of a locking-lever and armatures pivoted at right angles to each other, the one engaging normally with the said locking-lever and both engaging with each other.

4. In an electric door-opener, the combination of a latch or nose *W*, two armatures of a magnet pivoted at right angles to each other, a pivoted lever *p*, pressing upon the nose in a direction to partially resist the movement of the latter, and means for releasing the lever *p* from resisting the movement of said nose, consisting of one of said armatures pressing at right angles upon said lever *p* and normally resisting its motion, the said armatures being engaged with each other.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 27th day of February, 1890.

JOHN SCHNEIDER.

Witnesses:

E. G. DUVALL, Jr.,

EDWARD P. THOMPSON.