

(No Model.)

M. SULLIVAN.
ELECTRICAL LOCK.

No. 277,628.

Patented May 15, 1883.

Fig. 1.

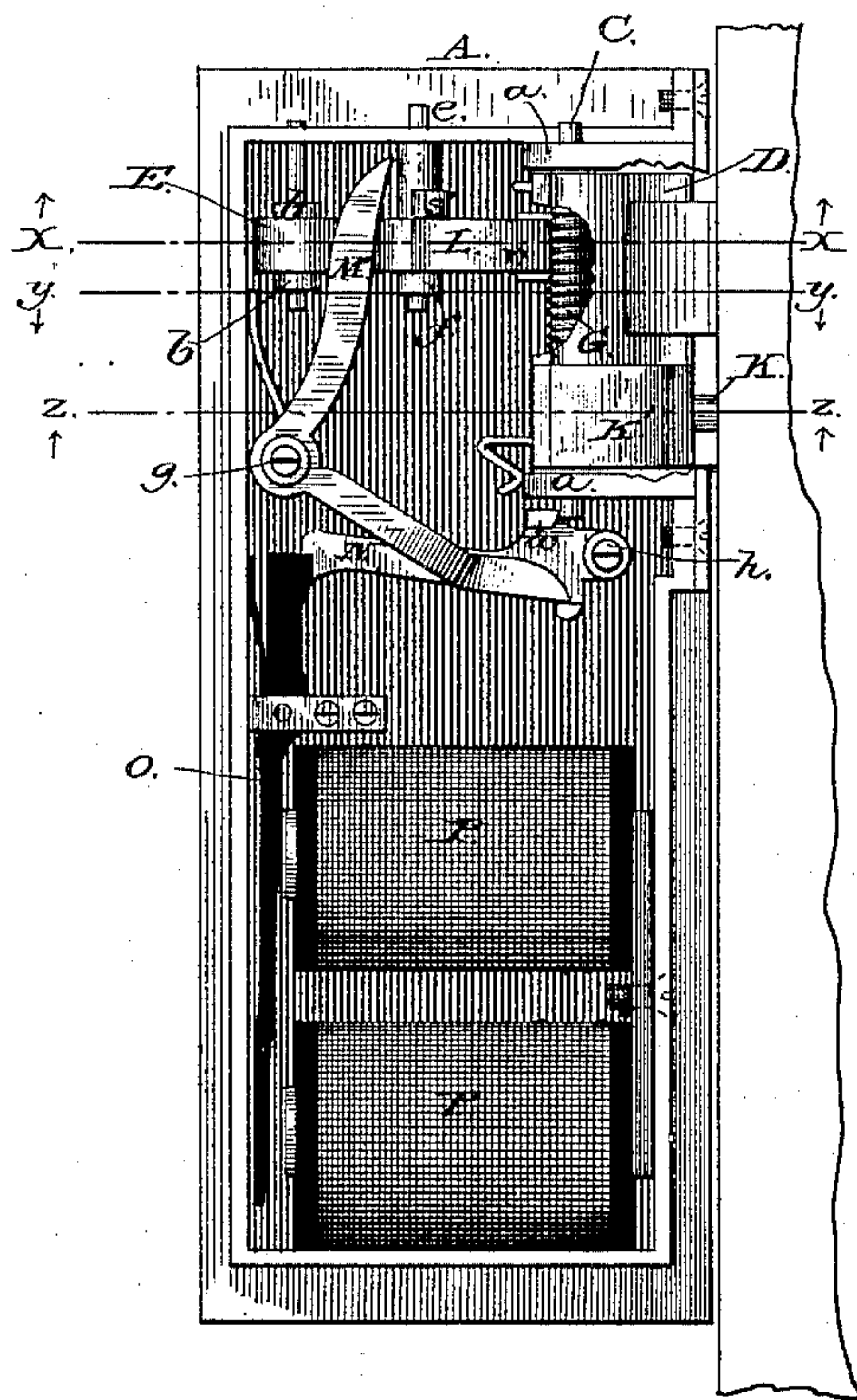


Fig. 2.

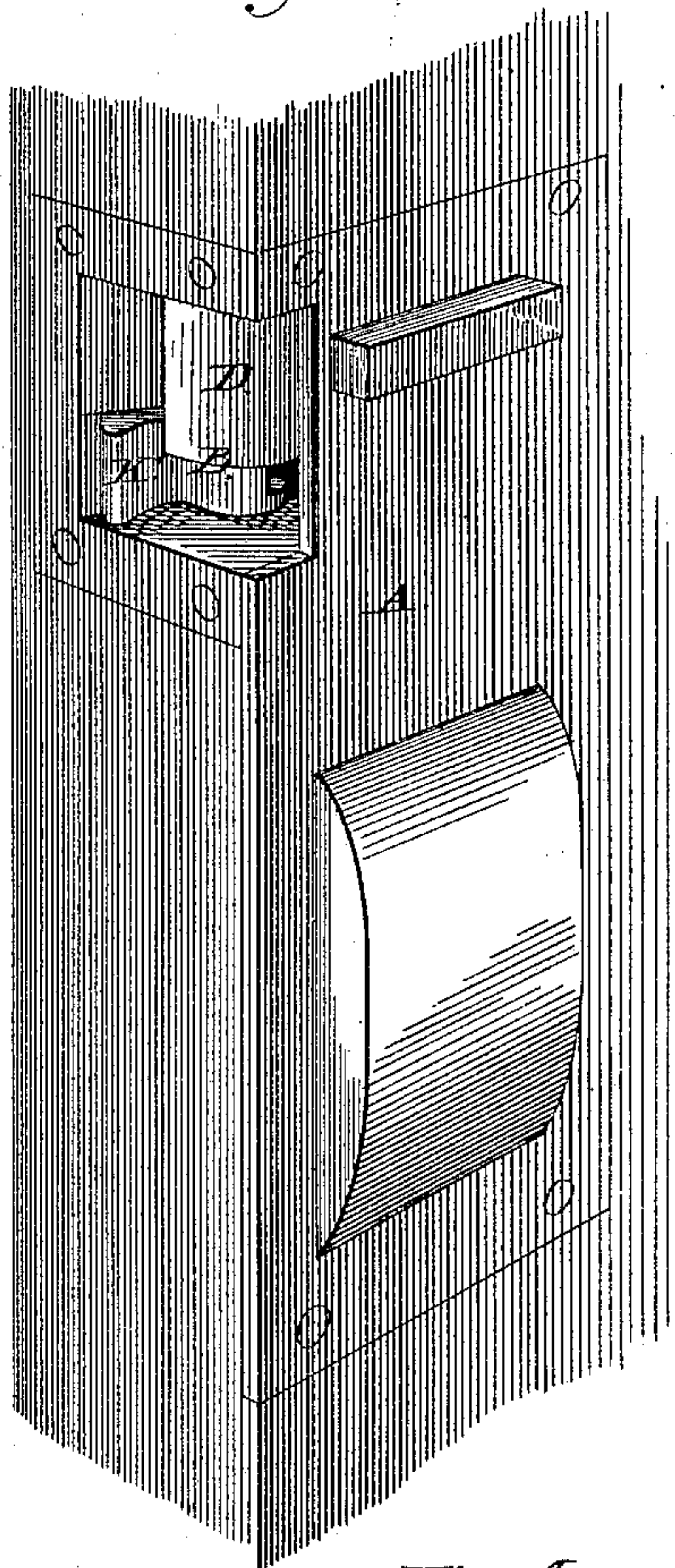


Fig. 3.

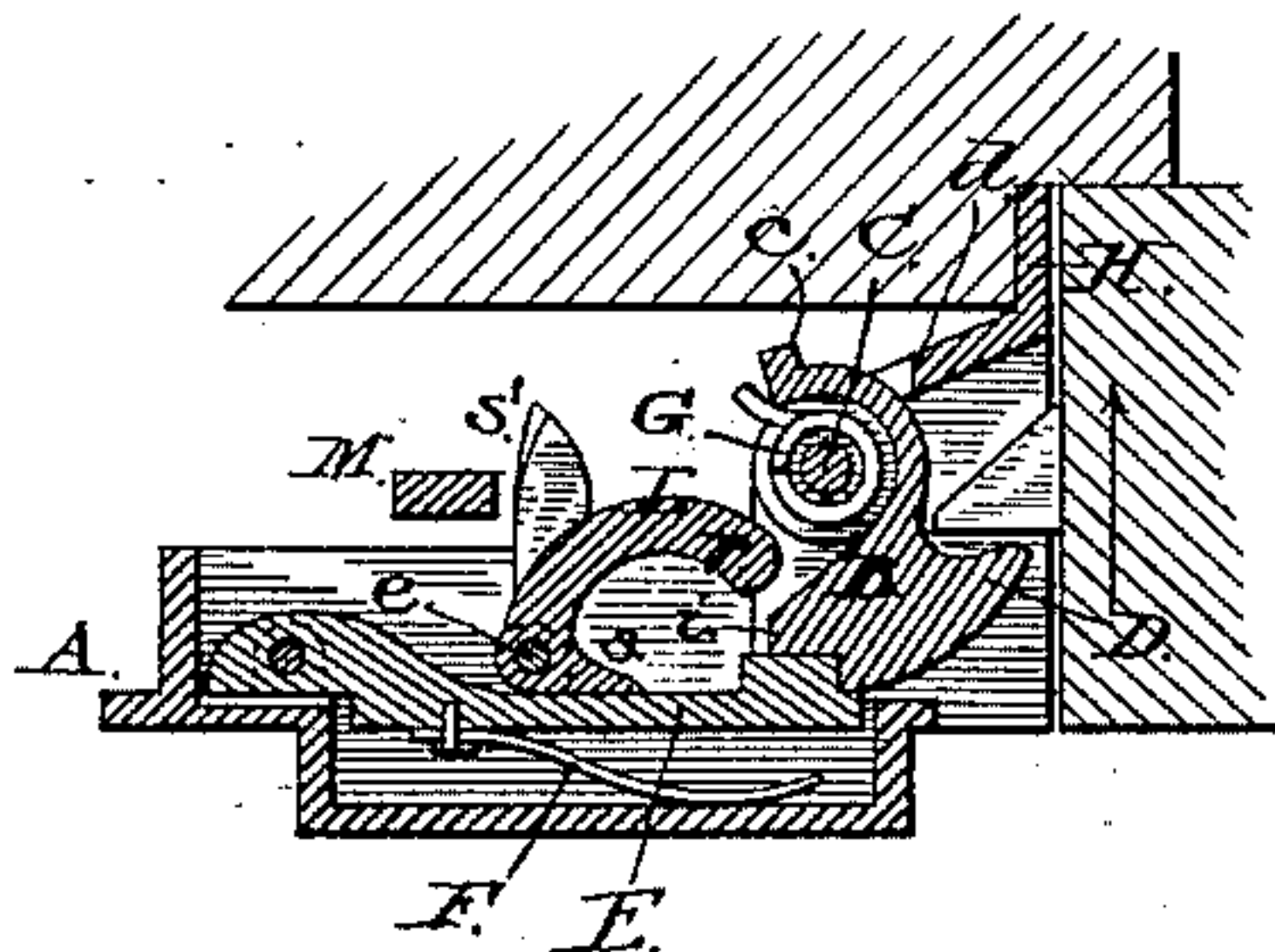


Fig. 4.

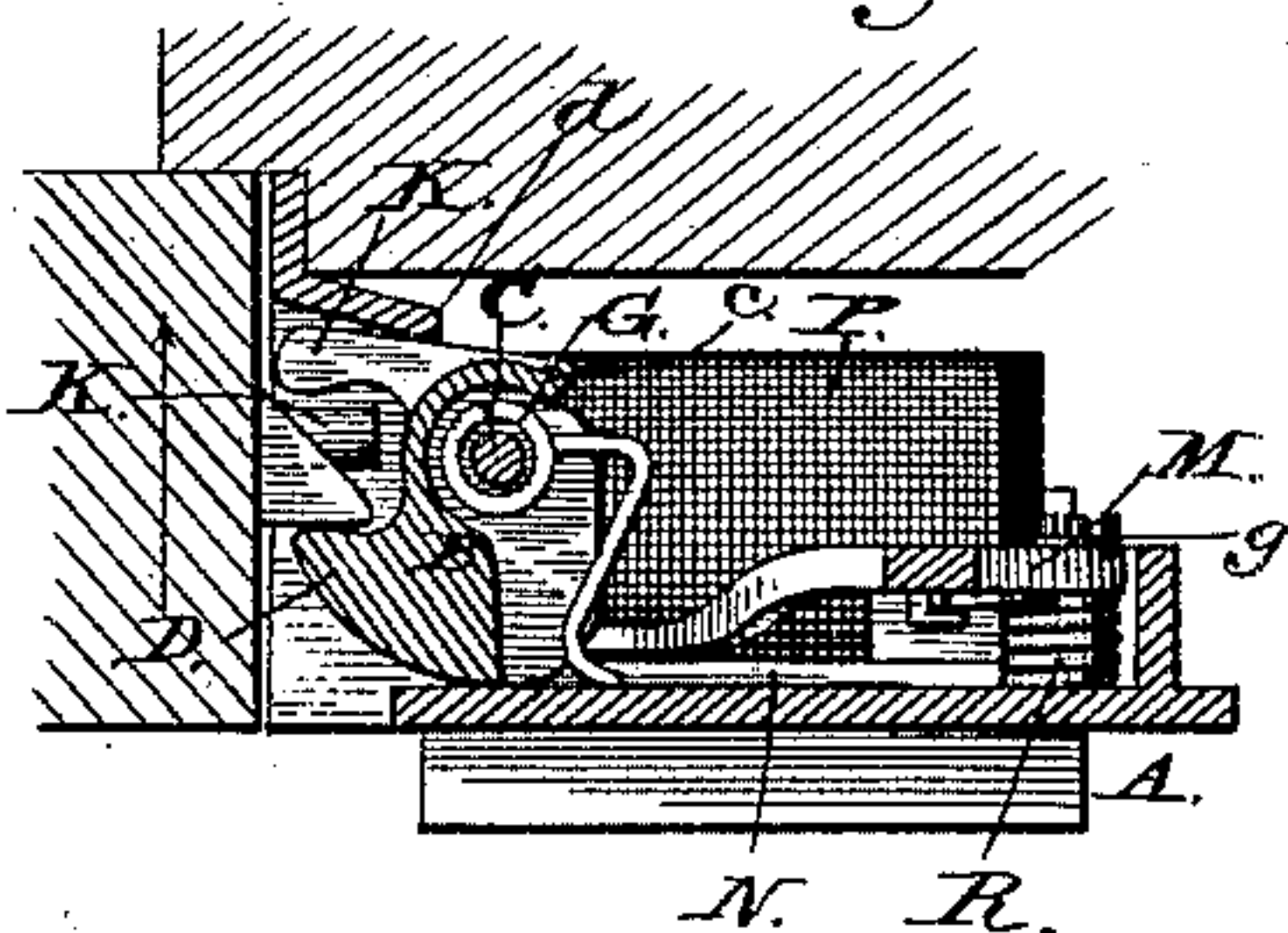
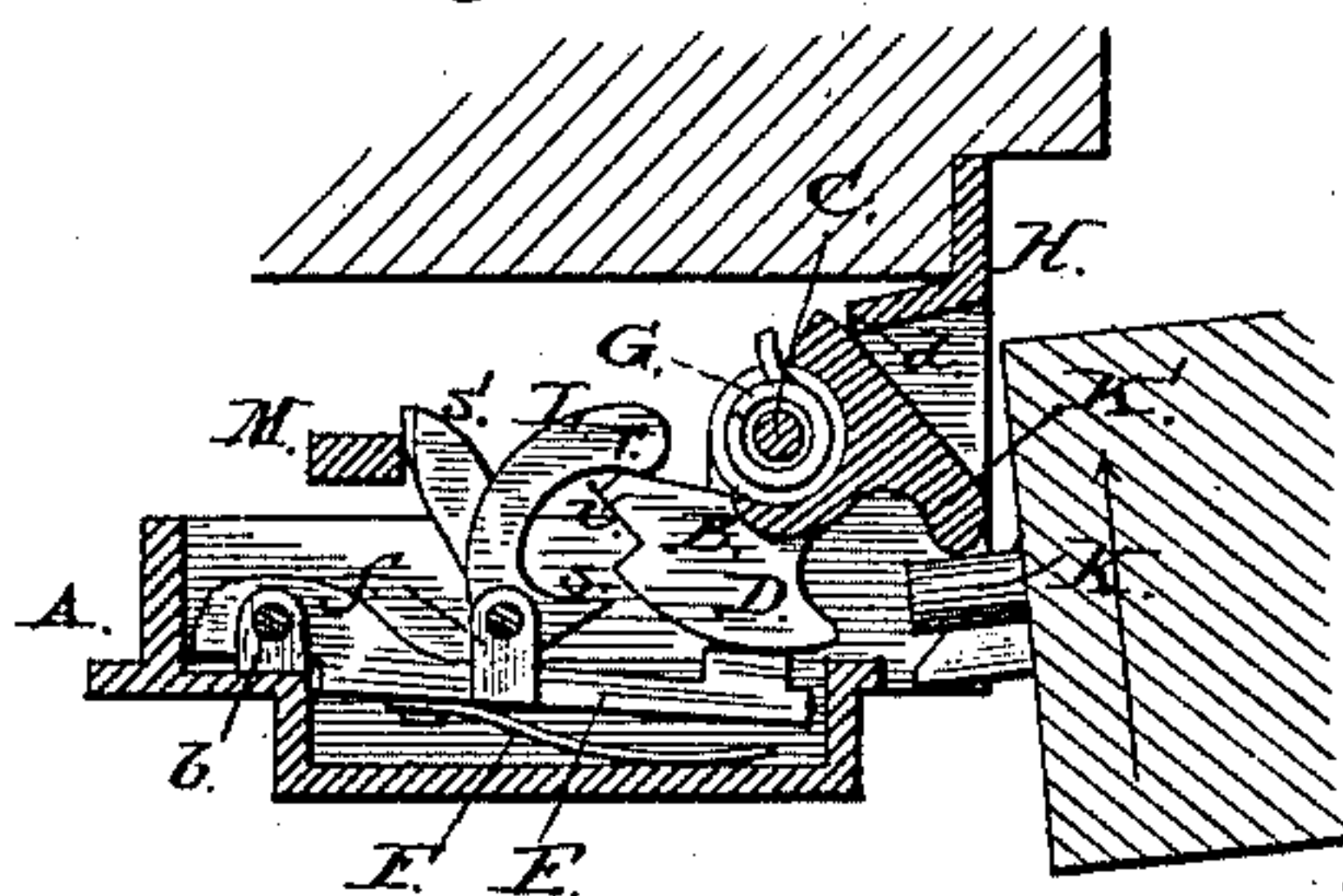


Fig. 5.



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UNITED STATES PATENT OFFICE.

MORTIMER SULLIVAN, OF BROOKLYN, NEW YORK.

ELECTRIC LOCK.

SPECIFICATION forming part of Letters Patent No. 277,628, dated May 15, 1883.

Application filed July 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, MORTIMER SULLIVAN, of Brooklyn, Kings county, State of New York, have invented a new and useful Improvement in Electric Devices for Opening Doors; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, making a part of this specification.

My invention relates to a mechanical striking-plate for doors, so constructed as to admit of a release of the door, when locked, by a movement of the stop which engages and holds the bolt of the door-lock.

It consists in so combining an electro-magnet with suitable springs and levers that when the magnet is excited by an electric current it shall operate to release the stop holding the door-lock and allow it to fly back under the influence of a spring, the stop being automatically set to engage the lock-bolt by the closing of the door.

The object of my invention is to provide a simple device for unbolting by means of electricity outer doors from an inner hall or room at a distance therefrom, as is often required or found convenient in apartment-houses.

In the accompanying drawings, Figure 1 is an elevation of the rear or inner face of my improved electric lock-releasing device; Fig. 2, a perspective view of the device when secured to the door-casing; Fig. 3, a transverse section in line *x x* of Fig. 1, looking upward, the device being set to engage the lock-bolt; Fig. 4, a similar section in line *y y*, looking in the opposite direction; Fig. 5, a section corresponding to that in Fig. 3, in line *z z* of Fig. 1, with the locking device released.

A is a wide plate adapted to be fitted and secured upon the casing of the door, instead of the ordinary form of striking-plate for the lock-bolt. The edge of the plate, at the point where the lock-bolt would be ordinarily engaged thereby, is cut away, as shown in Fig. 2, so that the lock-bolt, when shut, may pass this edge of the plate freely. On the under or inner side of the plate at this point a catch-block, B, is pivoted upon a pivot-pin, C, secured parallel to the edge of the plate, between projecting lugs *a a*, above and below, as shown

in Fig. 1. The catch-block is recessed to partially encircle its pivot-pin C, and it is formed with a catch or detent, D, projecting outward from its upper end in such manner that by properly turning the catch-block upon its pivot this catch shall come into position to engage the lock-bolt and hold it fast so long as the block itself is thereafter held and prevented from turning. To hold fast the block, a bar, E, Fig. 3, is fitted in a recess which is formed transversely in the plate A in line with the catch D, so that its front end shall engage an offset on the rear of the catch-block when the catch is in its locking position, and thus prevent the block from turning, the rear end of the bar being pivoted between lugs *b b*, projecting at the rear end of the recess, as shown in Figs. 1 and 5. The free front end of the bar E is automatically thrown outward to engage the offset on the catch-block by means of a spring, F, placed under the bar, as shown in Fig. 3. The catch-block is automatically turned back on its pivot, so as to carry the catch inward and clear of the lock-bolt, by means of a spiral spring, G, encircling the pivot-pin. It is stopped when the catch is fully withdrawn, as shown in Fig. 5, by the contact of a projection, *e*, thereon with an edge, *d*, (see Figs. 3 and 4,) of the face-plate H, which protects it. The catch-block is automatically turned forward on its pivot, the spring G being coiled up in the movement by the contact in the closing of the door of a projection, K, formed or fitted for the purpose upon the door, or upon its lock, immediately below its bolt, with a striking-piece, K', formed upon the catch-block B below the catch D, and at a distance therefrom equal to the thickness of the lock-bolt. (See Figs. 1, 2, and 4.) The contact of this striking-piece K' with the face-plate H serves to stop and limit the movement or rotation of the catch-block in this direction. The catch-block, held back against the tension of the spring G by the detaining-bar E in position to catch and detain the lock-bolt, is released and left free to move under the influence of the spring to let free the bolt by means of the three levers, L, M, and N, Fig. 1. The first lever, L, is placed immediately over the bar E, and pivoted to rock in the same plane therewith upon a pin, *e*, secured parallel to the pivot of

the bar E, between a lug, *f*, and the flange of the face-plate. The inner shorter arm, *s*, of the lever L bears upon the bar E. (See Fig. 3.) An outer longer arm, *s'*, projects far enough to engage the end of the upper arm of the second crank-lever, M. This lever M is pivoted to rock at right angles to the lever L upon a pivot-pin, *g*, projecting from the plate A on the opposite side from the catch-block, as shown in Fig. 1. Its lower arm, extending at right angles to the first, rests upon a lug upon the inner pivoted end of the third lever, N. This lever is pivoted at one end upon a pin, *h*, projecting from the plate A in line under the catch-block, and extends transversely across the plate A to the opposite side thereof, so that its free end may rest upon and engage the shorter arm of an armature, O, so pivoted that its longer arm shall vibrate in front of one or more electro-magnets, P P, secured in position upon the lower end of the plate. (See Fig. 1.) The crank-lever M is governed by a strong spring, R, coiled about its pivot-pin. (See Fig. 4.) This spring tends automatically to carry down the lower arm of the lever in position to bear upon and force down the transverse lever N, so that when the end of the armature-lever is withdrawn from under the end of the lever N, allowing the latter to drop, the crank-lever left unsupported by the lever N will, under the influence of the spring, be turned upon its pivot, causing its upper arm to swing toward the outer arm of the lever L and force it over, so that its lower arm shall bear down the bar E and release its hold upon the catch-block, which, being thus set free, will immediately, under the influence of its coiled spring G, turn back and release the lock-bolt.

By using a spring G of sufficient power, the catch-block, when released, may be made, through the agency of its striking-piece K', bearing against the projection K on the door, to throw open the door. Thus by closing the electric circuit connected with the electro-magnets P P, and attracting thereby the armature O, the catch-block is turned back through the movements of the interposed lever L M N, actuating the detaining-bar E, and the door un-

locked and thrown open. The levers are automatically reset in position to perform their functions as above described by the movement of the catch-block as it turns back to release the bolt, through the intervention of an arm, *r*, projecting toward the catch-block from the lever L, intermediate between its arms *s* and *s'*, (see Figs. 3 and 5,) and which, as the catch-block turns back, is struck and elevated by an offset, *i*, on the block. (See Fig. 5.) The elevation of the arm *r* throws back the upper arm, *s'*, of the lever L and causes it to force back the upper arm of the crank-lever M, so that its lower arm, striking a lug, *w*, on the upper side of the lever N, will lift said lever clear of the armature-lever O. The crank-lever M is thus held back so long as the catch-block is turned back to free the lock-bolt; but when the catch-block is turned forward again by the closing of the door against it, as described, its pressure upon the crank-lever M, by means of the intervening offset *i* and the arm *r* of the lever L, is removed, and the lever M will be left free to bear down upon the lever N, which, dropping upon the end of the armature-lever O, will be supported thereby until said lever O is withdrawn therefrom by the excitation of the magnet, as hereinbefore described.

I am aware that compressed air may be readily utilized as a motive power in lieu of electricity, and I contemplate the application of an air-bulb for moving the releasing-lever O, as an equivalent for the electromotor.

I claim as my invention—

The combination, with the spring-actuated rotating catch-block B, and with each other, of the detaining-bar E, three-armed lever L, crank-lever M, supporting-lever N, armature-lever O, and electro-magnet P, all substantially in the manner and for the purpose herein set forth.

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

MORTIMER SULLIVAN.

Witnesses:

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