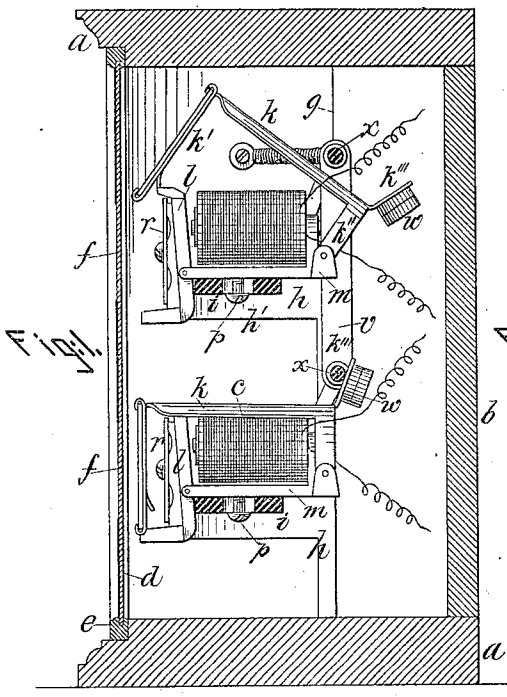
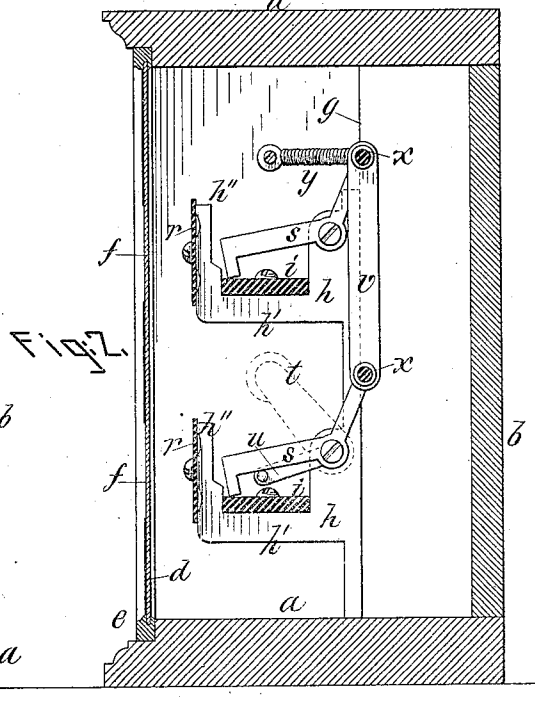
(Model.)

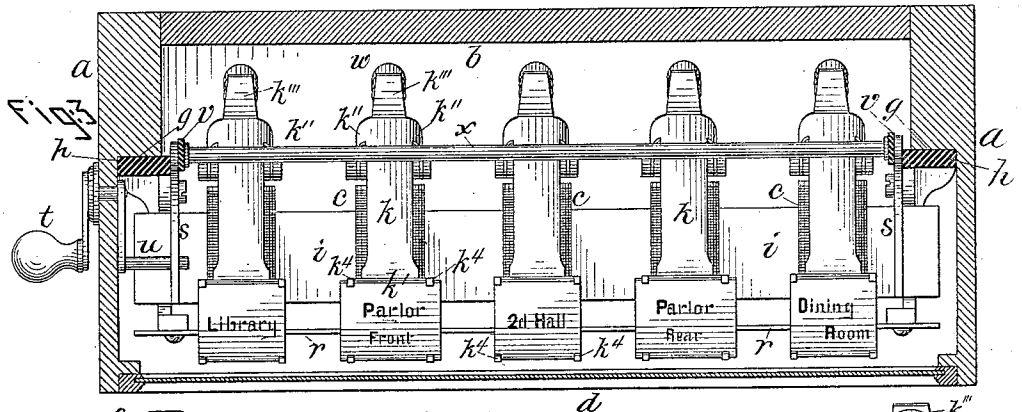
A. LÜNGEN.

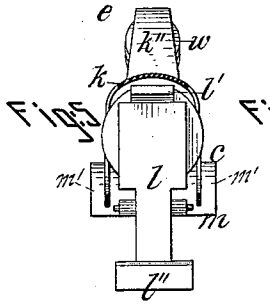
ELECTRICAL ANNUNCIATOR.

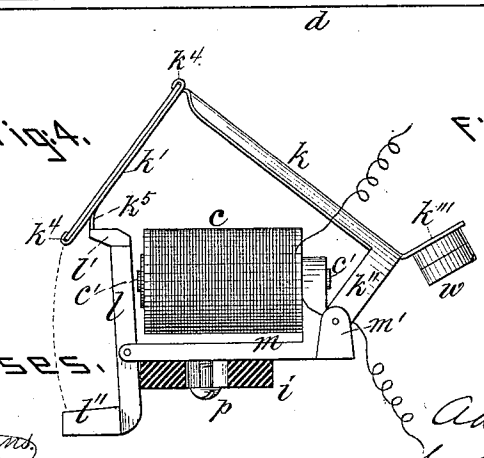
No. 258,537. Patented May 23, 1882.

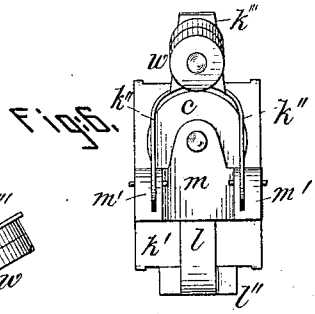












Witnesses.

E. C. Perkins

Geo. E. Gavin

Inventor

Adam Lungen

by Chas. M. Higgins

Attorney

New York

N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ADAM LÜNGEN, OF NEW YORK, N. Y.

ELECTRICAL ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 258,537, dated May 23, 1882.

Application filed September 7, 1881. (Model.)

To all whom it may concern:

Be it known that I, ADAM LÜNGEN, of New York city, county and State of New York, have invented certain new and useful Improvements in Electrical Annunciators, of which the following is a specification.

My present invention relates to annunciators for burglar-alarms or for call-signals for hotels, elevators, or other purposes, in which a number of distinct locations are represented each by a corresponding magnet in the annunciator, which magnet acts, when circuited, to attract an armature-pawl, and thereby release an upheld tag or indicating-plate, and allows it to fall before the reading-window of the annunciator, whereby the source of the call or the location at which the circuit has been closed is announced by the inscription on the fallen tag.

My invention consists in several details of construction relating to the form and arrangement of the tag-plate and of the magnet-holder, as well as the armature-pawl, and also in the device for raising the fallen tags, whereby general simplicity and efficiency are attained, but more especially whereby the use of retracting-springs on the armature is obviated and the sticking of the armature by residual magnetism is prevented; also, whereby a very easy and certain pivotal motion of the tag is obtained, yet the tag is not liable to be accidentally dropped by vibrations, as hereinafter fully set forth.

Figure 1 of the drawings annexed gives a vertical section of my improved annunciator with two rows of magnets and tags. Fig. 2 is a similar view with the magnets and tags removed, showing more particularly the raising device to raise or set the fallen tags; and Fig. 3 is a sectional plan of the annunciator. Fig. 4 is an enlarged side elevation of one "section" of the annunciator—that is, magnet, tag, and holder removed from the case, with the tag raised. Fig. 5 is a front elevation thereof with the tag dropped, and Fig. 6 a rear elevation of the same.

In Figs. 1, 2, and 3, *a a* indicate the case of the annunciator, which may be of any suitable size, according to the number of sections which it incloses. The circuit-wires from the several localities represented by the annunciator run to the back board, *b*, of the case in the usual manner, and thence connect to each of the separate magnets *c c*, representing these localities; but these connections are not here shown, as they form no part of my invention and are well understood. The front of the case consists of a glass pane, *d*, set in a suitable sash or frame, *e*, secured to the case, as shown, and this glass is painted with an opaque paint, except in strips *f f*, (see Figs. 1 and 2,) which are left clear and transparent, forming windows through which the indications of the annunciator are read. The ends of the case, as seen best in Fig. 3, are so formed as to present an offset or ledge, *g*, and to those offsets are screwed small metallic brackets *h h*, which project forward toward the glass front of the case. These brackets, as seen best in Fig. 2, have each a horizontal overhanging arm, *h'*, which ends in an upwardly-directed arm, *h''*. On the horizontal arms *h'* are supported metal plates or shelves *i i*, which extend lengthwise within the case in line with the windows *f f*, and are screwed at opposite ends to the end brackets, as shown best in Fig. 2, and on these plates or shelves are supported the several magnets of each row, with their pivoted tag-levers *k* and armature-pawl *l*, as seen best in Figs. 1 and 3.

Each magnet *c*, with its tag-plate and armature-pawl, is sustained by a magnet-holder, *m*, (seen best in Fig. 4,) which is a simple L-shaped casting, to the back and upright end of which is riveted or screwed the core *c'* of the magnet, which is formed, as usual, of soft iron, on which is slipped the spool or bobbin forming the coil of the magnet. The magnet-holder is also formed with small ears *m'* in its back end, below the magnet-core, in which slots are sawed or milled to receive the forked pivotal ends *k''* *k''* of the tag-plate, which is formed preferably of tin-plate, and pivoted in the slotted ears on slender wire pins driven through the same, as shown best in Fig. 6, and also in Figs. 5, 4, and 1. The tag-lever is preferably made by stamping in one piece of tin-plate in the form shown—that is, having a long, wide, central stem or body, *k*—from the front end of which projects a broad flat plate or head, *k'*, bent about at right angles to the body, while from the back end two feet or prongs, *k'' k''*, are bent downward from the side of the body, and are piv-

oted in the ears m' m', before described, and between these legs a tail-piece, k''', extends upwardly from the back end of the body, as fully shown in the several figures. The head-plate k' forms the tablet to receive the card or tag indicating the locality represented by the magnet, as shown best in Figs. 1, 3, and 4, and this plate is formed with overturned claws k^4 on its top and bottom edges, which admit and retain the cards, as shown. The front end of the magnet-holder m is slotted or forked, and in this forked end is pivoted the armature-pawl l, which has an L-shaped form in the edge view, its upper and longer arm being made in a broad plate form to overlie the pole of the magnet, as seen in Fig. 5, terminating in an outwardly-directed pawl-nose, l'. The lower and shorter arm of the pawl terminates in a heavy forwardly-directed foot or platform, l'', as seen in Figs. 1, 3, 4, 5, and 6. The magnet, its armature, and the tag-plate are thus all sustained by the magnet-holder m, which parts collectively form one "section," as it is termed, of the annunciator, which section is shown removed in Figs. 4, 5, and 6. These sections, when placed in the annunciator, are mounted side by side in rows on the shelves i i, as seen best in Figs. 1, 2, 3, and 4. The bases of the magnet-holders m rest on the shelves i i, to which they are secured by screws p p, (see Figs. 1 and 4,) the heads of which bear upon the under side of the shelves, while the threaded part extends through holes in the shelves and screws into the base of the magnet-holder, which holes are elongated transversely to the shelf, so that the magnet-holder may be adjusted back or forth thereon to obtain its correct position, and there held by tightening the clamp-screw. Now, when the magnet-holders are thus fastened in place upon the shelves i i, it will be observed that the armature-pawls l l hang just before the front edge of the shelves, and as the lower arms of these pawls, as before described, are heavier than the upper arms, hence this end tends constantly to gravitate against the edge of the plate, so as to retract the upper arms from the magnet-poles, and throw the noses of the pawls out into their engaging positions, as seen in Figs. 1 and 4. Therefore the front edges of the shelves i form the stop to limit the retracting motion of the armature-pawls, and which motion is adjustable, as before described. Now, when the tag-plate is raised a projecting tongue, k^5, cut from and bent backward out of the plate k', passes the tip of the armature-pawl l, which thence projects out beneath the same, and thus upholds the tag, as seen in Fig. 4 and in the upper part of Fig. 1. When the tags are thus upheld, as seen in Fig. 1, they are entirely removed from before the transparent strip f or reading-window of the glass front, and are thus out of sight from the exterior of the case. Now, a thin screen-plate, r, extends along in front of the pawls and their magnets and just behind the windows f, being fastened at each end to the upright arms on the brackets h h, and it thus conceals all parts of the instrument which would be otherwise seen through these windows, and it will be observed that the tag, when dropped, falls between said plate and the window. The surface of the screen-plate is hence preferably painted in a dark or black color, so that when the tags are raised the transparent windows present the appearance of a dark space or band, no parts of the devices within being visible to distract the sight; but as soon as a tag is dropped its white indicating-surface with black letters, as seen in Fig. 1, becomes at once conspicuous against the black or dark background of the screen r, and thus instantly attracts the eye, it being the sole object along a dark space. The screen-plate r thus forms an advantageous feature of my invention, and it might of course be painted white if the ground of the tag-cards were black; but the reverse is preferable, as just described.

It may now be noted, on reference to Fig. 1, that when the armature pawl is attracted by its corresponding magnet its tip will be withdrawn from the tongue k^5 of the tag-plate, thus allowing the tag to fall, as before described, and shown in the lower part of Fig. 1, and when thus fallen its lower edge will strike upon the outwardly-projecting foot l'' of the pawl and rest thereon, as seen in Fig. 1. This construction thus not only forms a simple stop to limit the drop of the tags, but it will be observed that the full momentum and shock of the falling tag is applied suddenly upon the attracted pawl, which will at once pull it forcibly away from the magnet into its retracted position, where its own gravity always tends to bring it, so as to effectually prevent its permanently sticking to the magnet, either by residual or permanent magnetism, which is a frequent difficulty in devices of this class. This constitutes one of the leading advantages of my invention, and is accomplished, as may be observed, by a very simple and neat construction.

Another important advantage of my improvement, as will be noted, lies in the fact that retracting-springs, in connection with the pawl, are dispensed with and its own gravity substituted, and that the pawl tends to gravitate against the front edge of the shelf i, which forms the stop to limit its retraction, as before described, and by simply adjusting the magnet-holder m slightly in or out upon the shelf, as before mentioned, the point of the pawl may be adjusted with relation to the engaging tongue of the tag-plate, so that the parts will act with more or less sensitiveness, as may be desired, thus rendering the construction very efficient and simple. It will be further observed that in my instrument the tag-plate is pivoted at a point entirely behind the magnet, and hence at a very long leverage, so that its pivotal movement is very easy and its fall more certain and positive.

Another improved feature of the tag-plate

consists in counterbalancing-weights *w*, which are affixed to the tail-pieces *k'''* *k'''* back of the pivotal lines, as shown. These weights are not, of course, sufficient to overbalance the front or indicating end of the tag, which, of course, preponderates, but are so proportioned as to remove a great deal of the weight which would otherwise rest on the tip of the pawl, and therefore render the movement of the parts more easy and sensitive. Furthermore, the weights *w w* are such as to bring the center of gravity not far from the pivot-line on the front arm of the tag-lever, so that while the front arm necessarily preponderates, yet the greatest concentration of weight is on the back arm. The result of this is that any jar or vibration of the annunciator tends to make the weighted end descend and momentarily lift the front end and raise the tongue slightly from the pawl, so that this jar hence acts in the most favorable way to prevent the accidental disengagement of the pawl and the unintentional drop of the tag, which is a serious defect in some annunciators.

It will be observed that the body *k* of the tag-lever is curved in cross-section, as seen in Fig. 3, similar to the curve of the magnet, which is for the twofold purpose of stiffening the same and to enable it to closely overlie the magnet when dropped, as will be appreciated on reference to Figs. 1 and 5.

It may be also noted that the claws k^4 k^4, to hold the tag-card, are formed on the top and bottom edges only of the tag-plate, and not on the vertical edges, as heretofore. Hence the card is slipped into place horizontally in the direction in which it reads, and therefore a longer or shorter card, according to the necessary length of its inscription, may be admitted without objection, which is in many cases quite desirable.

The raising device employed to raise and reset the tags after they have been dropped is shown best in Figs. 2 and 3. This consists of elbow-levers *s s*, pivoted on the brackets *h h*, at opposite ends of the case, in coincident position, with one arm inclining forward and resting on the shelves *i*, while the other arm projects diagonally upward and backward. A stiff rod or bar, *x*, is connected firmly at its opposite ends with the latter arms of the said elbow-levers, and extends longitudinally through the case from end to end thereof and over the row of tag-levers, as shown in Figs. 1, 2, and 3. When the tags fall their tails *k'''* *k'''* approach the bar *x*, as shown in the lower part of Fig. 1, and hence if this bar be depressed by swaying one of the elbow-levers *s s* any tag or number of tags which are down will be raised and caught by the pawls, and be thus reset. One of the elbow-levers is thus moved by a crank-knob, *t*, on one end of the case, as seen best in Fig. 3 and in dotted lines in Fig. 2, which crank-knob connects to a rock-shaft turning in the end of the case and fixed to a second crank, *u*, within the case, whose crank-pin bears against the adjacent elbow-lever *s*, as seen in Figs. 2 and 3. Where two or more rows of tags, &c., are used the elbow-levers and bars *s x* are simply duplicated in each row, as shown in Figs. 1 and 2, and the succeeding series are connected with the preceding by the links *v v*, Figs. 1, 2, and 3, so that the whole series of raiser-bars are operated simultaneously by one action of the crank-knob *t*. A spring, *y*, tends to constantly keep the raising device in its inactive position, as shown in Figs. 1, 2, and 3. This raising device is thus not only very simple and certain, but is readily extended to any number of rows of sections by simple duplication and the coupling of one series with the other, as will be appreciated.

What I claim is—

1. The combination, with an annunciator-magnet and its drop or tag, of an armature or armature-pawl having a part projecting into the path of motion of the tag or drop, with the tag or drop arranged to strike the said armature in its fall, and thereby retract it from the magnet, substantially as herein set forth.

2. The combination, with an annunciator-magnet and its tag, of an armature-pawl having one arm arranged to be attracted by the magnet and to engage the tag, and the opposite arm or foot of the pawl bent or directed across the path of the tag in its direction of drop, whereby the tag, when released, falls upon the foot of the pawl, and is thereby stopped in its motion, and at the same time retracts the pawl from the magnet, substantially as herein shown and described.

3. An annunciator constructed with a magnet-supporting shelf, in combination with magnets supported in holders affixed to said shelves, and armatures or armature-pawls pivoted on the said holders and depending before the edge of the shelf, whereby the said edge forms the stop to limit the retraction of the pawl, substantially as herein set forth.

4. In an annunciator, the screen-plate *r*, arranged before the magnets and armatures and behind the reading opening or window of the case, with tags arranged to project over in front of said screen when released, whereby the screen serves to conceal the general mechanism of the instrument, and affords a contrasting background, against which a fallen tag will conspicuously show, substantially as herein shown and described.

5. A pivoted annunciator-tag having a long arm formed with a tag-plate at one side of the pivoted axis, and a short arm at the opposite side of the axis, provided with counter-weights *w*, so proportioned as to dispose the center of gravity in the long arm near the axis, substantially as and for the purpose set forth.

6. An annunciator constructed with a longitudinal shelf or bar and with magnet-holders, each carrying a magnet and its pawl-armature mounted in transverse relation with said bar, with the pawls depending against

the edge thereof, and with a means of fastening said holders in fixed position with an adjustment back and forth transverse to said bar, substantially as and for the purpose set forth.

7. A tag raising and setting device for annunciators, consisting of levers *s s*, pivoted at opposite ends of a series or row of tags, and a longitudinal bar, *x*, overlying or commanding said row, and fixed at each end to said levers, with projections on the pivotal arms of said tags disposed in the arc of motion of said bar, and with a manipulating device to sway one of the levers *s*, and thereby sweep said bar toward the tags, substantially as and for the purpose set forth.

8. The combination, with two or more rows of annunciator magnets and tags, of a multiple raising and setting device consisting of levers *s s*, and bars *x x*, arranged substantially as set forth, and duplicated in each row with the coupling-links *v v*, connecting the succeeding series of bars and levers with the preceding, and with a common manipulating device to sway the first series, and thereby operate the whole, substantially as herein shown and described.

ADAM LÜNGEN.

Witnesses:
JNO. E. GAVIN,
CHAS. M. HIGGINS.