No. 698,018. Patented Apr. 22, 1902.

G. E. HOGLUND & C. M. HEDMAN.

ANNUNCIATOR.

(Application filed Nov. 27, 1900.)

(No Model.)

Fig. 1.

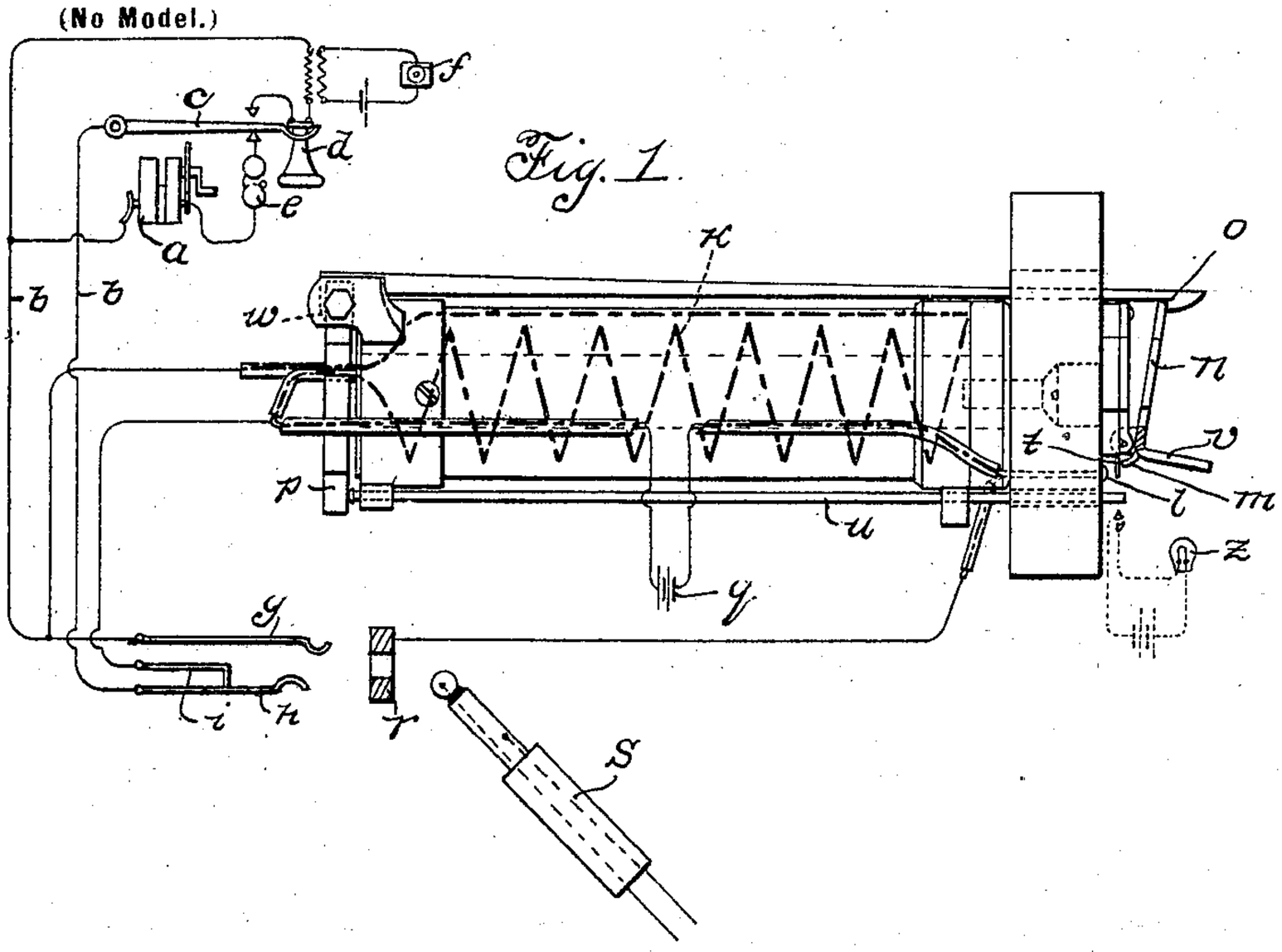


Fig. 2.

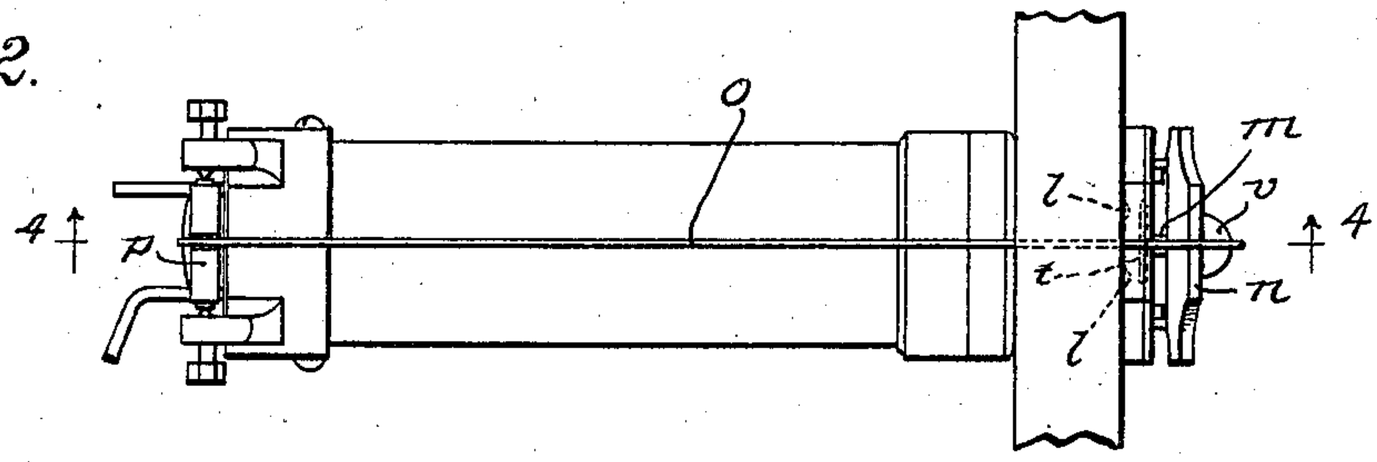


Fig. 3.

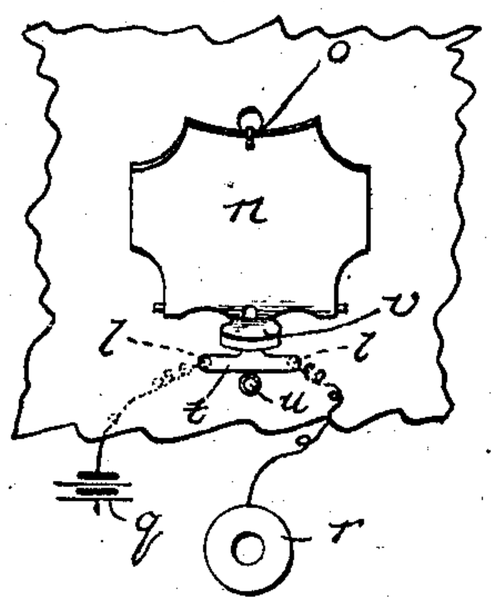


Fig. 4.

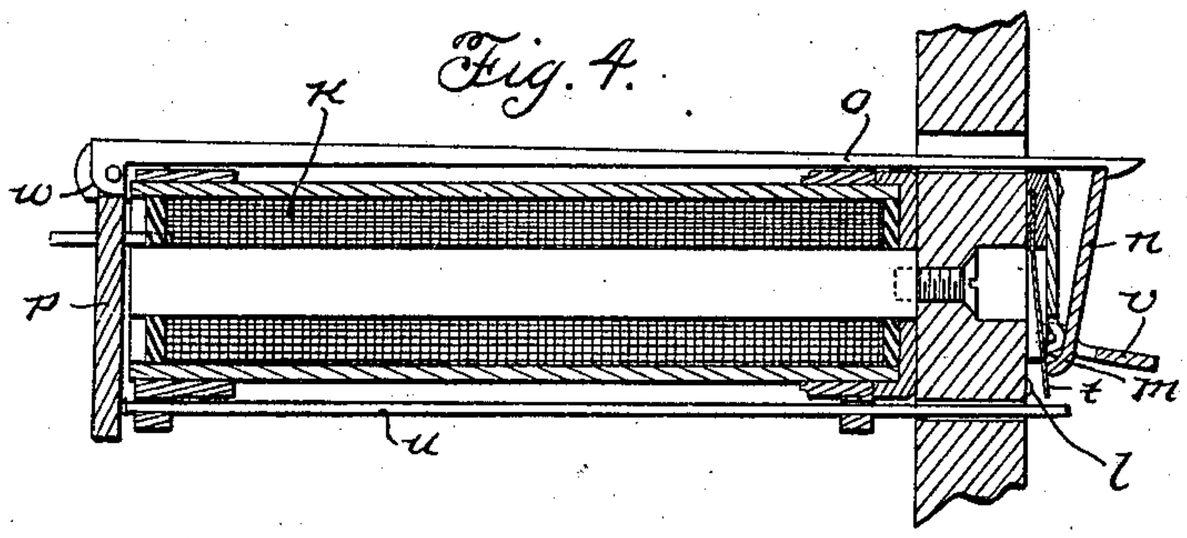


Fig. 5.

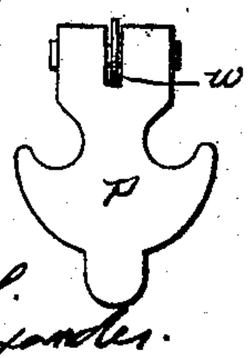
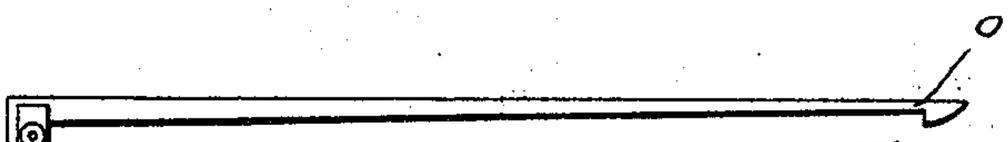


Fig. 6.



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UNITED STATES PATENT OFFICE.

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ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 698,018, dated April 22, 1902.

Application filed November 27, 1900. Serial No. 37,886. (No model.)

To all whom it may concern:

Be it known that we, GUSTAVUS E. HOGLUND and CARL M. HEDMAN, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Annunciators, (Case No. 1,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to annunciators, and has for its object the provision of improved means whereby the annunciator may be automatically restored.

Our invention is of particular utility in connection with that class of annunciators in which shutters are employed that are usually operated through the agency of gravity when released to reveal the designating character. We do not wish to be limited, however, to the particular form of annunciator to which the invention may be applied.

In the preferred embodiment of our invention the annunciator-shutter or other signal-revealing means is arranged, when operated, to change the condition of an electric circuit that includes the helix of an electromagnet, the circuit being placed in condition to be further changed to effect the operation of the electromagnet and through a suitable instrumentality restore the signal-revealing means to its normal position.

In practice we employ an electric circuit including an electromagnet that is normally open at two points and close one of these openings through the agency of the annunciator-shutter when it is released. A means is interposed between the armature of the electromagnet and the said shutter whereby when the said armature is actuated upon the closing of the said circuit at the second opening the armature by its attraction will effect the restoration of the shutter. After the annunciator-shutter is restored the circuit through the electromagnet is opened at the switch controlled by the shutter; but if the shutter should not be restored it will again close the circuit, and the armature will be again attracted in a second effort to effect the restoration. Thus the restoration of the shutter is made absolutely certain.

In the preferred embodiment of our invention we employ as the electromagnet for effecting the restoration of the shutter the same electromagnet that effects its release, the same armature preferably performing both functions of releasing and restoring the shutter. In order that the armature may more effectively accomplish its purpose, we so articulate the annunciator-releasing lever as to provide some lost motion between the said lever and armature, so that the releasing-lever need not be operated through a range corresponding to the movement of the armature, whereby the armature may be more effective in restoring the shutter and whereby the releasing member may be placed in position to engage the shutter.

Our invention is designed for annunciators that may be used in any connection, and we have not devised any special system of circuits adapted for use in connection therewith, and therefore do not claim as new any special system of circuits, but do claim, broadly, the device of our invention and any circuits that may work in combination therewith.

We will explain our invention more fully by reference to the accompanying drawings, in which—

Figure 1 is a side elevation of an annunciator constructed in accordance with our invention, the circuit connections thereof being diagrammatically indicated. Fig. 2 is a plan view of the annunciator illustrated in Fig. 1. Fig. 3 is a front elevation of the annunciator, some of the circuit connections being diagrammatically indicated. Fig. 4 is a sectional view on line 4 4 of Fig. 2. Fig. 5 is a rear elevation of the armature and its associated retaining-lever. Fig. 6 is a longitudinal elevation of the elements illustrated in Fig. 5.

Like parts are indicated by similar characters of reference throughout the different views.

In Fig. 1 we have illustrated a subscriber's telephone-station at which a magneto calling-generator *a* is adapted for inclusion between the limbs *b b* of the telephone-line by means of a telephone switch-hook *c* when depressed

through the agency of the receiver *d*. A signal-receiver *e* and a transmitter *f* are also illustrated at the substation and may be of any well-known construction. The generator *a* constitutes one type of current-generator that may be employed for energizing the electromagnet of the annunciator to effect the release of the shutter; but other generators of electricity may be employed, and they may be otherwise associated with the circuit, without departing from the spirit of our invention. The limbs *b b* of the telephone-line terminate in the sleeve line-spring *g* and the tip line-spring *h*. The tip line-spring *h* is here illustrated as provided with back contact *i*, that constitutes one terminal of the helix *k* of the electromagnet, the remaining helix terminating in the line-spring *g* and being preferably permanently connected with the limb of the telephone-line leading to the said line-spring. A circuit has thus been traced through the operating-helix of the annunciator-magnet, whereby the annunciator may be operated upon the actuation of the magneto-generator *a*. This circuit, as described, extends to the subscriber's station or to any other point from which signals are to be sent. A second circuit, including the annunciator-helix, is also provided for the purpose of effecting the restoration of the annunciator. This circuit includes the two contacts *l l*, that are electrically connected through the agency of an extension *m* of the shutter *n* when the said shutter is released by the retaining-lever *o* when the latter is actuated upon the attraction of the armature *p* occurring upon the operation of the magneto-generator *a*. This second circuit also includes a restoring-battery *q*, that is included in a conductor extending from one of the contacts *l* to one end of the helix. The remaining contact *l* is here shown as connected with a metallic thimble *r*, which is connected with the remaining terminal of the helix through the agency of the inserted plug *s*. When the annunciator-shutter falls, contacts *l l* are engaged by the projection *m*, preferably through the agency of a spring *t*, whereby the second or local circuit is closed at one point. When a call is answered, the connecting-plug *s* serves to close the said circuit at the remaining point—namely, at the thimble *r* and spring *g*—whereupon the armature of the annunciator is again actuated.

A push-rod *u* is preferably interposed between the armature and an angular extension *v* upon the shutter, which is engaged by the push-rod when the shutter is lowered. The armature when actuated moves the push-rod and causes the same to strike the angular extension *v* with sufficient force to place the shutter in position to be engaged by the catch-lever *o*. The shutter in being reëlevated effects a disengagement between the spring *t* and the contacts *l l*, so that the local restoring-circuit is again opened, whereby the armature is released and the catch-lever placed in position to engage the shutter. If the catch-lever should fail to engage the shutter, the local restoring-circuit will be again closed and the shutter forcibly reëlevated.

In order that the catch-lever may not accompany the armature through its full range of movement when acting to restore the shutter, we provide some means for disengaging the lever and armature during a portion of the range of movement of the latter. We have shown as one means for accomplishing this result a construction wherein the catch-lever has an end pivoted to the armature, the pivoted end being curved into a quadrant at *w*, whereby the catch-lever and armature are only engaged when the armature is in close proximity to its core.

We have in some of the claims used the term "signal-revealing means." We do not wish to be limited by this expression to a shutter that may reveal a designating character, as a movable element may be employed in the annunciator for effecting another form of signal. If it is desired to employ glow-lamps, an element such as the shutter *n* may be employed to close circuit through the lamp, whereby another form of signal may be revealed. We have indicated such an arrangement in dotted lines, a signal *z* in the form of a lamp being included in a local circuit with a battery that is closed when the shutter or other signal-revealing means is actuated.

While we have herein shown and described the preferred embodiment of our invention, we do not wish to be limited to the precise construction herein set forth; but,

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. In an annunciator, the combination with the operating-magnet thereof, of a shutter, means controlled by the magnet for releasing the shutter, means including the shutter for energizing said electromagnet, and means operated by the electromagmet for restoring the shutter, substantially as described.

2. In an annunciator, the combination with the shutter thereof, of means for releasing the same, an electromagnet having its armature adapted to actuate the shutter, and means including the shutter for energizing the electromagnet to effect an actuation of the armature and thereby the restoration of the shutter, substantially as described.

3. In an annunciator, the combination with the shutter thereof, of means for releasing the same, an electromagnet having its armature adapted to actuate the shutter, and means for energizing the electromagnet to effect an actuation of the armature, and thereby the restoration of the shutter, the said releasing means being also operated by the said armature, substantially as described.

4. In an annunciator, the combination with the shutter thereof, of a retaining-lever for holding the shutter in its normal idle position, an electromagnet having its armature

adapted to actuate the shutter, and means for energizing the electromagnet to effect an actuation of the armature and thereby the restoration of the shutter, the retaining-lever being articulated to the armature and having a limited lost motion with respect to the armature, substantially as described.

5. In an annunciator, the combination with the shutter thereof, provided with an extension v, of a retaining-lever for holding the shutter in its normal idle position, an electromagnet, a push-rod intervening between the armature of the electromagnet and the said extension v, and means for energizing the electromagnet to effect the actuation of the push-rod and the restoration of the annunciator-shutter through the engagement of the push-rod with the extension, the retaining-lever being articulated to the armature and having a limited lost motion with respect to the armature, substantially as described.

6. The combination with an electromagnet provided with a shutter and means for retaining the shutter in a normal position, the armature of the electromagnet serving to effect the operation of the said means, a circuit for energizing the said electromagnet to effect the operation of the said shutter-retaining means and thereby the release of the shutter, the said armature being adapted to actuate the shutter upon the release of the latter, a second circuit normally provided with two openings also for energizing said electromagnet, means whereby the shutter in falling may close one of the said openings, and means whereby the second opening of the restoring-circuit may be closed to thereby effect the operation of the armature and the restoration of the shutter, substantially as described.

7. The combination with the shutter of an annunciator, of means for effecting the release of the shutter, an electromagnet whose armature is adapted to actuate the shutter when the latter is released, a restoring-circuit adapted to include the said electromagnet and provided with two openings, means whereby the shutter in being released may close one of the said openings, and means for closing the remaining opening, whereby the said armature may be actuated to effect the restoration of the shutter, substantially as described.

8. The combination with the shutter of an annunciator, of means for effecting the release of the shutter, an electromagnet whose armature is adapted to actuate the shutter when the latter is released, a restoring-circuit adapted to include the said electromagnet and provided with two openings, means whereby the shutter in being released may close one of the said openings, and means for closing the remaining opening, whereby the said armature may be actuated to effect the restoration of the shutter, the same armature also having operative connection with the shutter-retaining means, whereby it may act in the double capacity of effecting the release of the shutter, and its restoration, substantially as described.

9. The combination with a signal-revealing means, of means for actuating the signal-revealing means, an electromagnet for effecting the restoration of the signal-revealing means, a restoring-circuit including the electromagnet and provided with two openings, means whereby the signal-revealing means may close one of the said openings when the signal-revealing means is operated to reveal the signal, and means for closing the second opening of the said circuit, substantially as described.

10. The combination with a signal-revealing means, of means for actuating the same to effect a signal, means for restoring the signal-revealing means, manually-operated means for controlling the operation of the restoring means in part, and means controlled by the signal-revealing means serving in conjunction with the manually-operated means to jointly govern the restoring means, substantially as described.

11. The combination with a signal-revealing means, of means for actuating the same to effect a signal, means for restoring the signal-revealing means, controllable means for controlling the operation of the restoring means in part, and means controlled by the signal-revealing means serving in conjunction with the controllable means to jointly govern the restoring means, substantially as described.

12. The combination with an electromagnet provided with a shutter and means for retaining the shutter in a normal position, the armature of the electromagnet serving to effect the operation of the said means, a circuit for energizing the said electromagnet to effect the operation of the said shutter-retaining means and thereby the release of the shutter, the said armature being adapted to actuate the shutter upon the release of the latter, a second circuit having two openings also for energizing the said electromagnet, whereby the said armature may again be actuated to effect the restoration of the shutter, means whereby the shutter when falling may close one of the said openings, and means for closing the remaining opening to close the second circuit, substantially as described.

13. A signal provided with a single energizing-coil adapted to effect the presentation thereof, signal-restoring means, and means whereby the said coil may be operated to effect the operation of the signal-restoring means, substantially as described.

In witness whereof we hereunto subscribe our names this 23d day of November, A. D. 1900.

GUSTAVUS E. HOGLUND.
CARL M. HEDMAN.

Witnesses:
ALFRED STROMBERG,
GEORGE L. CRAGG.