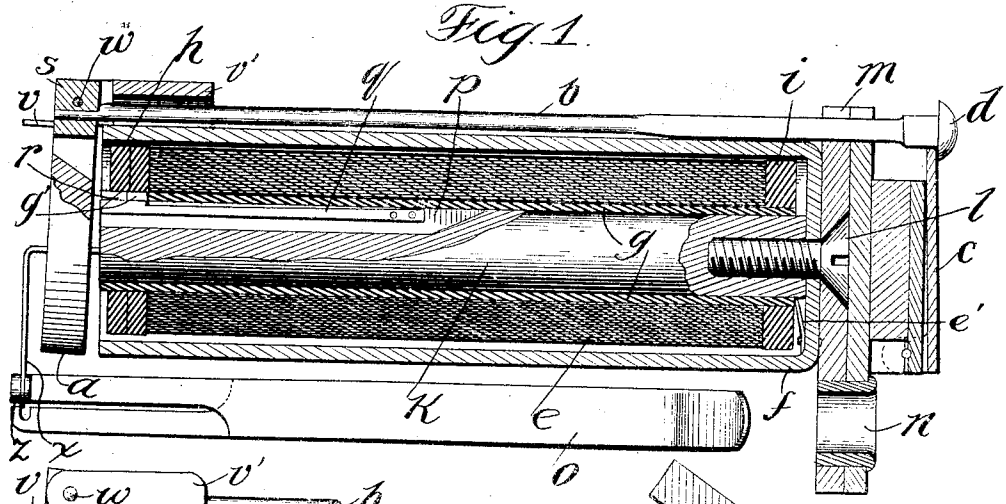
No. 842,565. PATENTED JAN. 29, 1907.

H. J. KUSEL.

ANNUNCIATOR.

APPLICATION FILED NOV. 20, 1905.

Fig. 1.



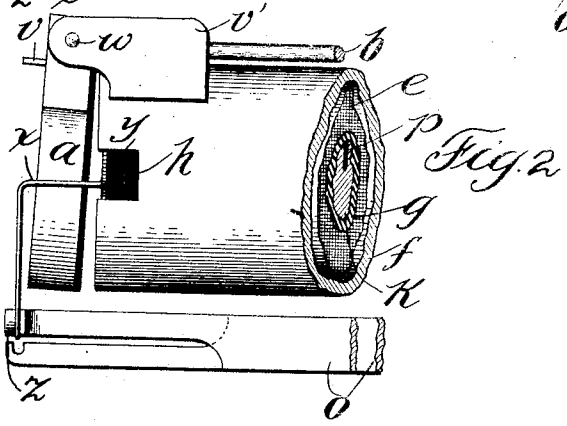


Fig. 2.

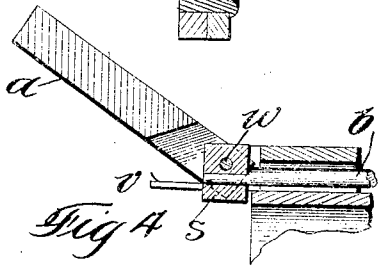


Fig. 4.

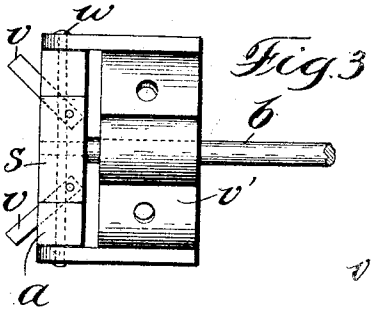


Fig. 3.

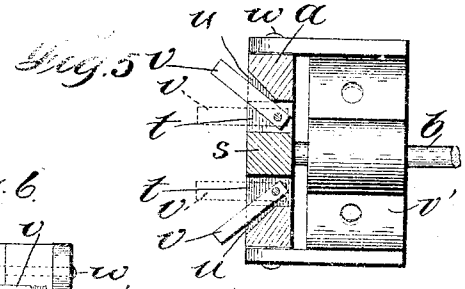
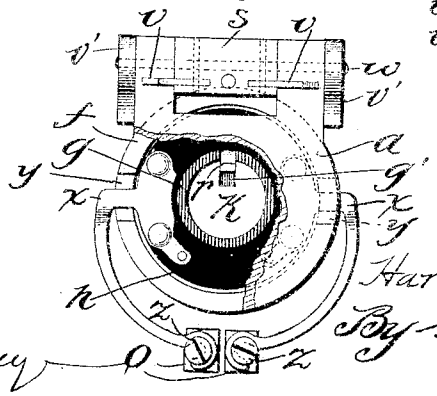


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE

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ANNUNCIATOR.

No. 842,565. Specification of Letters Patent. Patented Jan. 29, 1907.

Application filed November 20, 1905. Serial No. 288,119.

To all whom it may concern:

Be it known that I, HARRY J. KUSEL, a citizen 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, 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.

My invention relates to electromagnets, and finds a useful embodiment in annunciators that are adapted, for example, for use in telephone-exchange practice, though I do not wish to be limited in all embodiments of my invention to the particular adaptation thereof named.

In practicing my invention the coil of the electromagnet, which is in the form of a spool, is inserted within a jacket or tube in such a way that it may be readily removable, and to this end I provide a locking device having two interlocking members, one member being provided upon the spool and the companion member upon the stationary portion of the electromagnet structure, this portion being preferably the core portion, that is normally fixed with respect to the shell portion of the structure. The core portion is longitudinally slotted and desirably has a spring-catch anchored in the slot, the free end of the catch, owing to the resiliency of the catch, being normally thrust out of the slot in the core into a position to be engaged by a head of the spool. This end of the catch is located near the end of the core that is immediately opposed to the armature, and a displacement of the armature affords access to the catch, which may be depressed to release the interlocking relation between the core and the spool, whereupon the spool may be readily withdrawn. To facilitate the disengagement between the spool and core, I desirably employ a spring at the opposite end of the spool, which exerts a thrusting action upon the spool, the spring being preferably strong enough partially to eject the spool when the interlocking engagement of the spool and the core has been broken. In order that the core and spool may be made accessible at the armature for this purpose and other purposes, I desirably employ a construction that normally maintains a substantially fixed relation between the armature-lever and the armature, but which upon manipulation will permit the armature to be folded back to afford the stated accessibility. In practicing this feature of my invention I employ a locking device, which in one condition of use will effect a substantially fixed relation between the armature and the armature-lever and which in another condition of use will afford no interlocking relation between the armature and armature-lever, whereupon the armature may be rotated upon its pivot or shaft independently of the armature-lever. The preferred construction includes a block carried by the armature-lever and a locking-leaf that engages suitable slots in said block and the armature structure, which, locking-leaf when in the slots of the block and the armature brings about a locking relation of said block and armature. This locking-leaf is pivoted, preferably, to the block. There are desirably two such locking-leaves, one on each side of the armature-lever. When said block and armature are locked together, they operate as a unit, whereby when the armature is attracted the armature-lever is actuated. When this locking-leaf is not in locking relation with the block and armature, the armature may be rotated or swung with respect to the block.

Another feature of my invention resides in providing a pair of comparatively rigid terminals for the winding of the magnet, which terminals are connected with suitable switch parts, as the strip-contacts of a spring-jack, whereby electrical association of the magnet with its circuit is effected and the magnet-spool is prevented from rotating. This construction thus serves to prevent the terminals of the spool from being grounded, short-circuited, or from otherwise contacting with any part from which they should be removed. To this end the head of the spool immediately opposed to the armature desirably has mounted thereupon the electromagnet-winding terminals having the characteristics above set forth, and the free ends of these terminals are anchored to the switch-contacts in order that the said terminals may perform the electrical and mechanical functions above noted.

I will explain my invention more fully by reference to the accompanying drawings, showing the preferred embodiment thereof, in which—

Figure 1 is a longitudinal sectional elevation of an individual-telephone-line indicator constructed in accordance with the invention. Fig. 2 is a complete elevation of a part of the structure shown in Fig. 1. Fig. 3 is a plan view showing the armature and armature-lever construction, together with the mounting therefor. Fig. 4 is a sectional elevation showing the manner in which the armature may be folded back with reference to the armature-lever. Fig. 5 is a view somewhat similar to Fig. 3, excepting that the armature and the block forming a part of the armature-lever are shown in section through the slots provided in the said block and armature. Fig. 6 is a view in rear elevation of the structure shown in Fig. 1, parts being broken away.

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

In the embodiment of the invention shown an annunciator is illustrated that includes an armature *a*, an armature-lever *b*, and a shutter *c*, normally maintained in position by the catch *d* at the front end of the armature-lever. The winding *e* of the electromagnet is desirably contained in a shell or jacket *f*, preferably formed of soft iron, this winding *e* being provided upon a spool that includes a cylindrical portion *g* and heads *h i*. This spool is slipped upon a core portion *k*, that is desirably secured to the shell by means of a screw *l*, which desirably has a flaring head that serves to hold the shell in a supporting-body *m*, which element *m* desirably also supports a thimble *n*, located in suitable alinement with the contact-strips *o* of a spring-jack mounted in any suitable manner. The core *k* is desirably slotted at *p* and there carries a spring-catch element *q*, desirably in the form of a strip of resilient metal, anchored in a convenient way at its inner end to the core *k* and provided at its outer end with a detent or catch formation *r*. A slot *g'* is desirably formed in the spool, into which the catch device *r* projects for the purpose of locking the spool and core together. In order that the catch may be made accessible in effecting removal of the magnet-spool and in order that said spool may be readily removed, I provide the mechanism illustrated, which desirably includes a block *s*, forming a component part of the armature-lever, which block has one or more slots *t* cut therein, while the armature is provided with one or more slots *u*, that are adapted to register with the slots *t* when the armature and armature-lever occupy their normal relative positions, in which positions they may be secured by means of locking-leaves *v*, one for each pair of coöperating slots *t u*, said locking leaves when in engagement with both slots substantially constituting the armature and armature-lever and operating unit. The locking-leaves are desirably pivoted in position. In the construction shown most clearly in Fig. 5 these locking-leaves are pivoted upon the armature-lever structure and directly upon the block *s* of said structure.

When it is desired to gain access to the spool, the locking-leaves are thrown into the position indicated in dotted lines in Fig. 5, whereupon the armature may be swung with respect to the armature-lever to some such position as that indicated in Fig. 4.

The saddles *v'* are provided upon the shell *a* in any suitable way and carry a pivot-shaft *w*, that permits the bodily movement of the armature and armature-lever together when the armature and armature-lever are interlocked, and upon which the armature may be swung when the armature and armature-lever are unlocked.

In order that the removal of the magnet-winding may be facilitated, I desirably employ a spring *e'*, which thrusts the magnet-winding partially from the casing *f* when the catch *r* is released, whereafter the said winding may be grasped by the fingers and completely removed.

The spool-head *h* carries the terminals *x x*, desirably in the form of comparatively rigid strips of metal suitably bent and curved so that they may project laterally through slots *y* in the casing or shell *f*, said terminals *x* desirably extending toward the rear, as indicated most clearly in Figs. 1 and 2, whereafter they are bent downwardly for connection with the contact-strips *o* by the screws *z*. This construction serves to maintain such a mechanical relation between the terminals *x* and the contacts *o* that will prevent rotation of the magnet-winding, and thereby keep the said terminals *x* out of metallic contact with the shell *f* to prevent short-circuiting or grounding of the magnet-winding.

It is obvious that changes may readily be made in the embodiment of the invention shown without departing from the spirit of the invention, and I do not, therefore, wish to be limited to the precise construction shown; but,

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

1. An annunciator, including an electromagnet, a spool upon which the same is disposed, a casing within which the spool is contained, and a locking device for holding the said spool in position within the casing including one locking member carried by the spool and a companion locking member having a mounting substantially stationary with respect to the casing.

2. The combination of an annunciator

whose winding is removable with reference to the balance of the annunciator structure, and a locking device having one locking member provided upon the removable winding structure and the other locking member provided upon the balance of the annunciator structure.

3. The combination with the winding of an annunciator of a spool carrying the winding, a core portion for the electromagnet over which said spool is slipped, and a locking device having one locking member provided upon the core and another locking member provided upon the spool.

4. The combination with the winding of an annunciator of a spool carrying the winding, a core portion for the electromagnet over which said spool is slipped, and a locking device having one locking member provided upon the core and another locking member provided upon the spool, the locking device upon the core being in the form of a spring-catch, said core being slotted to receive said catch.

5. An annunciator, including a displaceable winding, means for holding the winding in a normal position, and a spring for displacing the winding when said means are operated to permit the displacement of the winding.

6. An annunciator, including a displaceable winding, a locking device for holding the winding in a normal position, and a spring for displacing the winding when said locking device is operated to permit the displacement of the winding.

7. An annunciator, including a displaceable winding, a casing for the winding, a locking device for holding the winding in a normal position in the casing, and a spring for displacing the winding when said locking device is operated to permit the displacement of the winding.

8. An annunciator, including a displaceable winding, a casing for the winding, a locking device for holding the winding in a normal position in the casing, a spring for displacing the winding when said locking device is operated to permit the displacement of the winding, and a core for the winding mounted within the casing, upon which said winding is movable.

9. An annunciator, including a slotted armature-lever portion, a slotted armature, and a locking-leaf adapted to engage the slots in the armature-lever portion and the armature to bring about a fixed relation between the armature and armature-lever, the armature being movable with respect to the armature-lever when said leaf is withdrawn from an engaging slot.

In witness whereof I hereunto subscribe my name this 17th day of November, A. D. 1905.

HARRY J. KUSEL.

Witnesses:
G. L. CRAGG,
LEON STROH.