(No Model.)

C. E. SCRIBNER.

CLEARING OUT ANNUNCIATOR.

No. 383,015. Patented May 15, 1888.

Fig. 1.

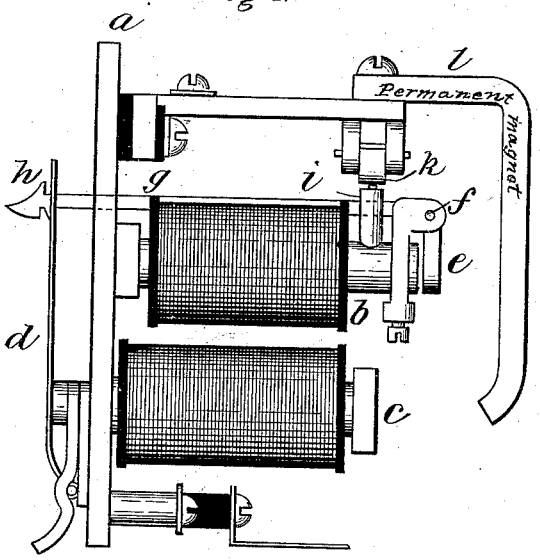
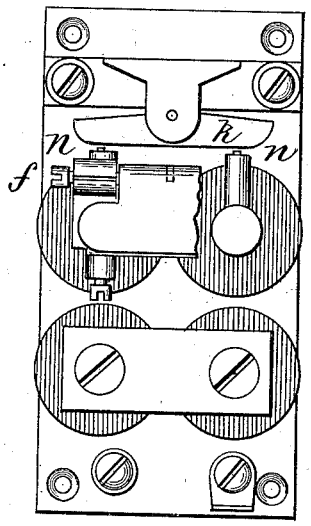


Fig. 2.



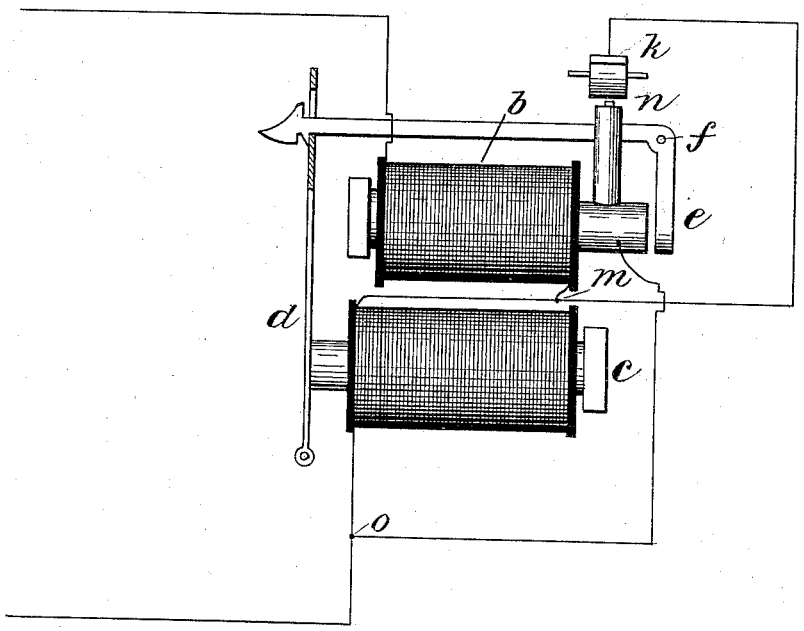


Fig. 3.

Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES E. SCRIBNER, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

CLEARING-OUT ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 383,015, dated May 15, 1888.

Application filed December 27, 1886. Renewed November 21, 1887. Serial No. 255,772. (No model.)

To all whom it may concern:

Be it known that I, CHARLES E. SCRIBNER, 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 Clearing-Out Annunciators for Telephone-Exchanges, (Case 125,) 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 clearing-out annunciators for telephone-exchanges; and it has for its object the transmission of two signals upon a single annunciator.

In certain telephone-exchanges it is desirable that the subscribers should call each other after the central-office operator has switched their lines into connection. When this system is employed, it is also desirable that the subscribers, after the termination of a conversation shall be able to signal the central office.

My invention provides for a clearing-out signal at the central office which is not actuated when one subscriber calls another, but which may be actuated at the will of the subscriber.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of my annunciator. Fig. 2 is a rear elevation thereof, showing a portion of the neutral armature broken away. Fig. 3 is a diagrammatic view of the electro-magnets and circuits of same.

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

Referring to Fig. 1, *a* is a plate, upon the rear of which are mounted electro-magnets *b* and *c*, and upon the front of which is mounted the shutter or flap *d*. The neutral armature *e*, pivoted at *f*, is opposed to the poles of the electro-magnet *b*. An armature-lever, *g*, is carried by armature *e*, and is provided at its free end with a double hook, *h*, which engages with and normally holds up shutter *d*. Two motions of armature *e* toward the pole of electro-magnet *b* are required to release the shutter *d*, the first motion permitting the shutter to start and fall against the upper catch of the hook, and dropping to engage the second notch below, another motion of the armature-lever releasing the shutter and permitting it to fall. Polar extensions *i*, from the poles of the electro-magnet *b*, are provided with and are opposed by a centrally-pivoted polarized armature, *k*. This armature is polarized by permanent magnet *l*. The poles of electro-magnet *c* are extended through the frame plate *a*, and are so presented to the shutter *d*, which is of iron, as to hold the shutter up by the attraction for it when the current traverses the coils of the electro-magnet.

Referring to Fig. 3, the circuit may be traced through the electro-magnets *b* and *c* and out. A shunt or short circuit may be traced around electro magnet *c*, beginning at point *m*, thence to polarized armature *k*, and thence through contact-point *n* to the cores of the electro-magnet *b*, and thence to point *o*. This shunt or short circuit prevents current from traversing coils *c* when polarized armature *k* is in contact with either of the contact-points *n* of the pole-pieces of magnet *b*. Polarized armature *k* will rock or vibrate upon its pivot, alternately striking one pole or the other of magnet *b*, when an alternating current is traversing the coils of magnet *b*. When currents are not traversing the coils of magnet *b*, armature *k* sticks to one pole or the other of said magnet *b*, because of its magnetism acquired of its permanent magnet *l*. Currents of one polarity sent through magnet *b* will hold the armature *k* to one pole or the other accordingly as the current is in one direction or the other. Neutral armature *e* is attracted by the electro-magnet *b* when currents traverse its coils regardless of the direction of the current.

Now, suppose an alternating current to be traversing the coils of electro-magnet *b*. Armature *k* vibrates with the alternations from one pole to the other, and during the period of its vibration the shunt-circuit *n* to *k* to pole of magnet *b* to *o* is broken. Magnet *c* thus becomes energized and its poles attract iron shutter *d* and prevent it from falling, although armature-lever *g* and its hook *h* vibrate, tending to release the shutter. The impulses through electro-magnet *c* occur with each vibration of armature *k*, and although short are of sufficient strength to retain the shutter *d* and prevent it from falling. If pulsations of current in one direction are trans-

mitted through electro magnet *b*, armature *k* does not vibrate, but remains in contact with one pole of said magnet, thus shunting out of circuit electro-magnet *c*. Neutral armature *e*, however, is attracted, and two impulses of current through magnet *b* will cause the armature *e* to raise hook *h* twice, thus releasing the shutter *d*, which falls, as it is not attracted by the poles of the magnet *c*.

The object of the double detent *h* is to prevent shutter *d* from falling in case the first impulse of an alternating current should be in a direction to hold armature *k* upon the pole against which it already chanced to rest. If there were but a single detent, the shutter would fall upon the first impulse, as the magnet *c* would continue shunted during that impulse. With the double detent two impulses are necessary to release the shutter, and if an alternating current be sent armature *k* must vibrate at the second impulse, letting magnet *c* into the circuit, and even though the shutter has moved to the second detent it will not have passed out of the reach of the attraction of magnet *c* and will be drawn to its poles. Now, therefore, if an alternating current be sent over a line in the circuit of which my annunciator is included, the shutter will not drop and no signal will be given. If impulses of one polarity be sent upon the line, the shutter will drop.

The ordinary polarized magneto bells and generators supplied to subscribers' stations of a telephone-exchange are arranged to send alternating currents, and with my annunciator may be used by one subscriber for calling another without dropping the shutter at the central office. A simple battery placed at each subscriber's station, with switching devices for introducing it into the circuit of the subscriber's line, may be used for transmitting impulses of one polarity. When such impulses are transmitted, the shutter will fall at the central office, and the other subscriber's bell, although in circuit, will not ring, it being a polarized bell.

Thus after a connection any subscriber can call the central office without calling the other subscriber, or he may call the other subscriber without calling the central office.

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

1. In an annunciator, an electro-magnet with two armatures, one of said armatures being polarized, the other armature being neutral, in combination with an electro-magnet normally shunted out of circuit by the said polarized armature, and a shutter normally held by the armature lever of neutral armature, said shutter being opposed to the poles of the normally-shunted magnet, whereby alternating currents traversing the annunciator will prevent the shutter from falling.

2. An electric annunciator provided with two armatures, one of said armatures being polarized and the other neutral, the neutral armature being extended and provided with a catch for holding up the annunciator-shutter, said shutter being connected with the armature of another electro-magnet, in combination with circuit-connections, whereby a straight current through the coils of the annunciator operates the neutral armature thereof to cause the shutter to fall, the coils of the magnet, of which the shutter serves as an armature, being shunted out by the polarized armature.

3. In an electric annunciator, the combination, with the neutral armature connected with the double detent, of the shutter normally supported thereby, said shutter being of iron and placed so as to be acted upon by an electro-magnet, *c*, the polarized armature of the annunciator, and circuit-connections, whereby a straight current sent through the electro-magnet of the annunciator is shunted from electro-magnet *c*, while the double detent is operated to permit the shutter to fall, substantially as described.

4. An electric annunciator consisting of an electro-magnet and two armatures, one of which is polarized and the other neutral, the neutral armature being connected with a double detent which serves to retain an iron shutter, in combination with an electro-magnet, *c*, presented to said shutter, and circuit-connections, whereby current of one polarity causes the detent to vibrate and release the shutter, magnet *c* being at the time shunted out by the polarized armature.

5. The combination, with an electro-magnet normally shunted out of circuit by the polarized armature of the electro-magnet of an annunciator, of the neutral armature of said electric annunciator extended to form a double detent, the iron shutter supported thereby, said shutter being presented to the poles of the normally-shunted electro-magnet, whereby the shutter is retained in position or allowed to fall, according as current of one polarity or current in reversals is sent through the annunciator.

In witness whereof I hereunto subscribe my name this 16th day of November, A. D. 1886.

CHARLES E. SCRIBNER.

Witnesses:
GEORGE P. BARTON,
WM. M. GILLER.