

(No Model.)

2 Sheets—Sheet 1.

C. E. THROOP.

TELEPHONE CENTRAL OFFICE APPARATUS.

No. 261,969.

Patented Aug. 1, 1882.

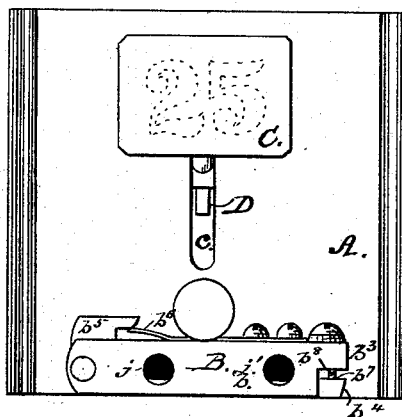


Fig. 1.

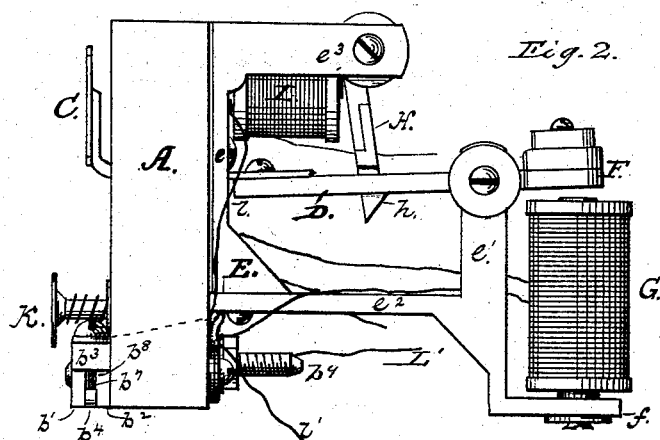
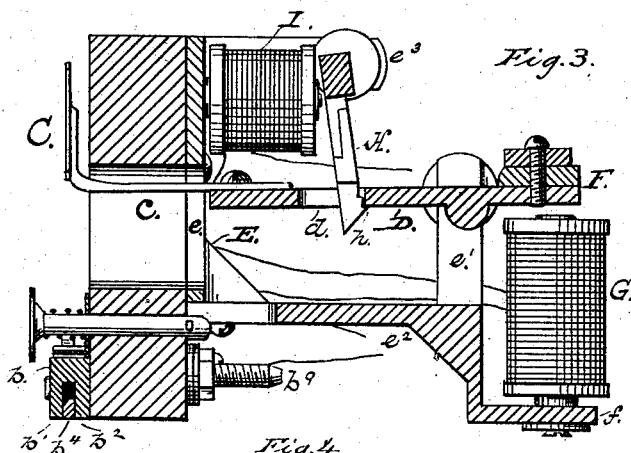


Fig. 2.



*Fig. 3.*

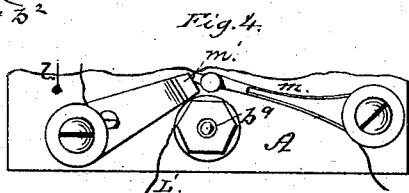


Fig. 4.

**WITNESSES**

WITNESSES  
T. A. A. O'Rand.

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Charles E. Throop  
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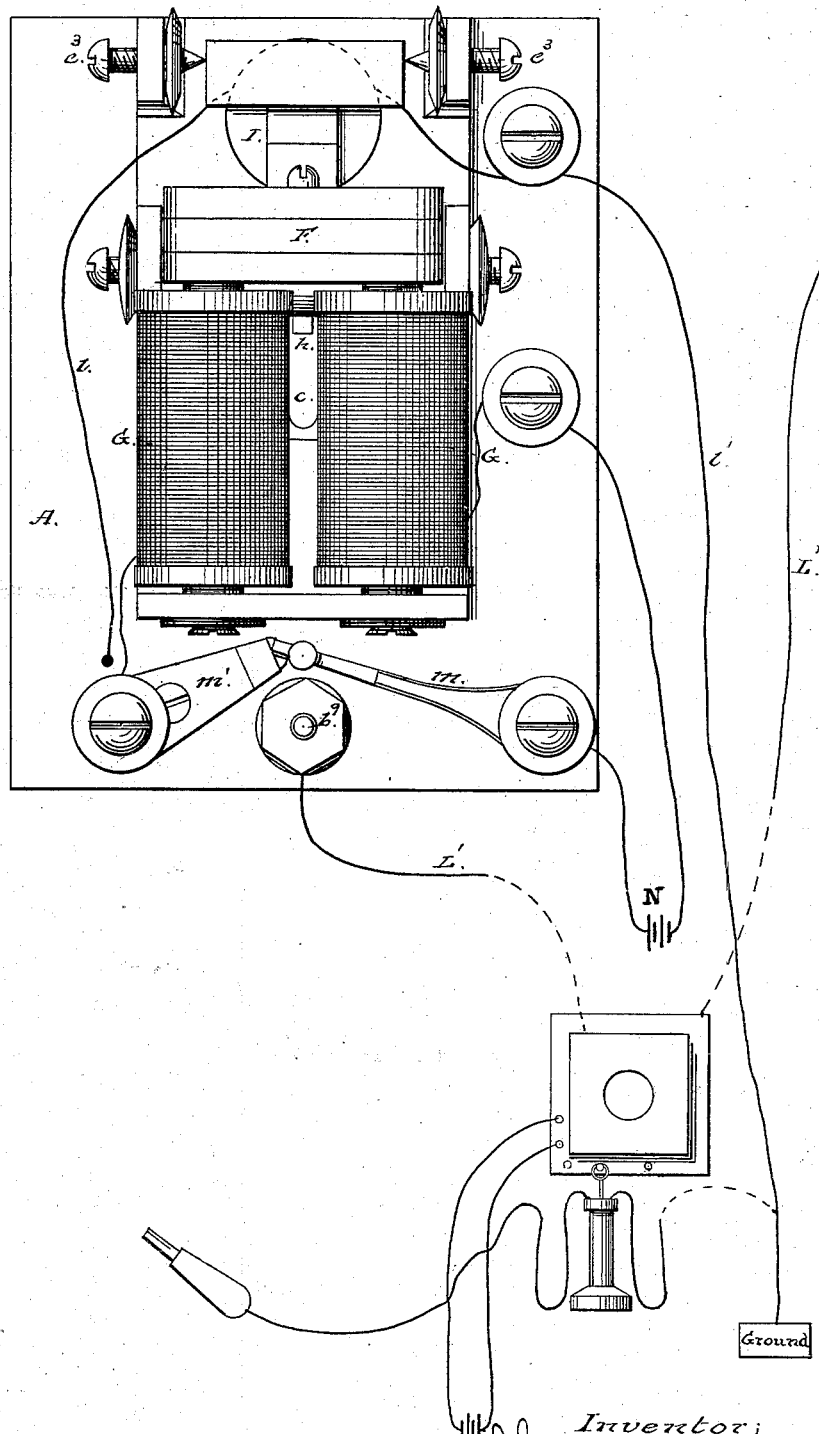
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Fig. 5.



Attest;  
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Inventor;  
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# UNITED STATES PATENT OFFICE

CHARLES E. THROOP, OF AUBURN, NEW YORK.

## TELEPHONE CENTRAL-OFFICE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 261,969, dated August 1, 1882.

Application filed March 8, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES E. THROOP, a citizen of the United States, residing at Auburn, in the county of Cayuga and State of New York, have invented certain new and useful Improvements in Telephone Central-Office Apparatus; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to the class of annunciators and switches adapted for use in telephone central offices for receiving calls and connecting subscribers' lines, the object being to facilitate the connection of separate lines and the restoration of the apparatus to its normal condition after use, all as will be hereinafter more fully described, and specifically designated in the claims.

In the accompanying drawings, Figure 1 is a front view of a telephone central-office switch-board provided with my invention. Fig. 2 is a side view of the same. Fig. 3 is a transverse section Fig. 4 is a detail view thereof, and Fig. 5 is a rear view of the complete apparatus. Similar letters of reference occurring on the several figures indicate like parts.

Referring to Fig. 1, the letter A designates the switch-board; B, spring-jack for receiving the plugs of line-connecting and telephone cords, and C the drop or shield of the annunciator.

Referring to Figs. 2 and 3, the letter D designates a lever, which carries the drop C at its front end, which projects through a slot, *c*, in the switch-board, and also through the wall-plate *e* of a bracket, E, which is fixed to the back of the switch-board. Intermediately of its length the lever D is pivoted between arms *e'*, projecting upward from the horizontal plate *e''* of the bracket, and at its rear end said lever carries an armature, F, which stands in the field of attraction of an electro-magnet, G, which is supported by a metallic shelf, *f*, which projects from bracket E and forms the yoke for the two cores of the said magnet. The lever D has a preponderance of weight in front

of its pivot, so that when the armature F is not attracted by the magnet G the front arm of the lever, unless held up by some means, will fall and carry down the drop C, thus disclosing a number or other character depicted on the board in such position as to be concealed by the drop when the latter is raised, and in the position in which it ordinarily stands.

In order to hold the lever and drop up, the lever is slotted longitudinally, as shown at *d*, and downward through this slot extends a catch, H, which is pivoted at its upper end to an arm, *e''*, and inclines rearwardly by gravity, and takes under the lever, its shoulder *h* extending rearwardly beyond the rear end wall of the slot when the lever is raised. For tripping this catch, which is either of iron or steel, or carries an armature of one of these metals, an electro-magnet, L, is fixed horizontally to the wall-plate of bracket E, and when an electric current traverses the coil of the magnet its core attracts the catch and withdraws the shoulder *h* from under the lever, so that the latter falls, being at such time not held up by the magnet G, as will presently be explained.

I will now explain the manner in which the two magnets get their currents. The spring-jack B is, for convenience, arranged directly below the annunciator-drop C. It is composed of a metallic plate, *b*, slotted through vertically for the greater portion of its length, so as to give it two parallel arms, *b'* *b''*, and the end of the plate where the arms are connected is shouldered, as shown at *b''*. Between the two arms *b'* and *b''* is a lever, *b''*, pivoted at one end between said arms, and having at its pivoted end a hook, *b''*, which takes over a spring, *b''*, which is fixed to the top of plate *b*, and holds the lever up between the arms *b'* and *b''*. The free end of this lever extends under the shoulder *b''*, and is provided with a contact-point, *b''*, which, when the lever is up, comes in contact with the tip of a screw or pin, *b''*, which passes through the shouldered part of plate *b*, but is insulated therefrom. The plate *b* is provided with two plug-holes, *j j'*, and the beveled upper edge of lever *b''* stands slightly above the lower edges of these holes, so that when an ordinary plug is inserted into either hole it will strike said beveled edge and force the lever down so that its

contact-point  $b'$  will break contact with the tip of the pin or screw  $b^2$ .

The letter  $L'$  indicates a subscriber's line-wire which enters the central office. This line-wire connects with a metallic bolt,  $b^3$ , by means of which the plate  $b$  is connected to the switch-board. A wire,  $l$ , leads from the insulated pin or screw  $b^3$  to one terminal of the coil of magnet I, and from the other terminal of this coil a wire,  $l'$ , leads it to the ground. It will now be seen that the line-wire  $L'$  is normally connected with the ground through the bolt  $b^3$ , plate  $b$ , lever  $b^4$ , pin or screw  $b^3$ , wire  $l$ , coil of magnet I, and ground-wire  $l'$ , so that if at a subscriber's station a battery-circuit is connected with the wire  $L'$ , which is numbered, say, 25, a current will engage the magnet I and the lever D and drop C will fall. This falling of the drop announces to the switch-board operator that a subscriber on a line having the number disclosed by the falling drop desires to either communicate with the central office or be put in communication with some other subscriber. He therefore inserts the plug of a cord connected with his transmitting-telephone into one of the holes  $j$  or  $j'$ , thus breaking the circuit of the line-wire at the pin  $b^3$  and connecting it with the ground through the operator's receiver in the ordinary manner. The operator then ascertains the subscriber's wants. If he wishes to be connected with some other line—say line 27—the operator inserts in the unoccupied hole of the plate  $b$ , under the annunciator of line 25, the plug attached to one end of a connecting-cord, the plug at the other end of which he inserts in one of the holes of the plate  $b$ , under annunciator 27, which is constructed and connected precisely like annunciator 25. The circuit being broken at pin  $b^3$ , the magnet I is of course cut out, and releases the catch H, which assumes its inclined position, ready to engage and hold up the lever D. The two lines having been connected, the drop of the calling-annunciator is raised as follows: A spring push-pin, K, passes through the board just above the plate  $b$ , and its rear end abuts against a metallic spring,  $m$ , which is connected with one pole of a local battery, N, having its other pole connected with one terminal of the coil of the magnet G, the other terminal of the coil being connected with a metal bracket,  $m'$ ,

which projects over the spring  $m$ . When the push-pin K is forced inward the spring  $m$  is pressed into contact with the bracket  $m'$  and the circuit of battery N completed through the coil of magnet G, causing the core of said magnet to attract the armature F and raise the lever D so that it will engage with catch H and be held up, maintaining the drop C in position to conceal the number or character behind it until another current is passed over the line after it has reconnected with the ground, which is done by removing the plugs from the holes in plate  $b$ . When the connecting-cord plugs are inserted the telephone-plug may be removed or allowed to remain, as may be desired.

Having thus described my invention and explained the operation thereof, I claim—

1. In an electric annunciator, the combination, with the pivoted lever D, carrying the drop or shield C and a catch for holding and dropping said lever, of an electro-magnet arranged to raise said lever in position to engage with said catch, substantially as and for the purpose specified.

2. In an electric annunciator, the combination, with the pivoted lever D, carrying the drop, of the catch H, arranged to automatically engage said lever and hold it up, the electro-magnet I, arranged to disengage said catch from said lever, the electro-magnet G, arranged to raise said lever and drop, and means for closing electric circuits through the coils of said magnets, substantially as specified.

3. In an electric annunciator, the combination, with the lever D, carrying the drop or shield C, a catch for automatically engaging and holding up said lever, an electro-magnet for disengaging said catch from said lever, and the spring-jack B, having one of its parts connected with the line-wire and the other part connected with the ground through said magnet, said jack being adapted to receive one or more plugs and break the ground-connection of the line-wire, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES E. THROOP.

Witnesses:

JOSEPH C. ANDERSON,  
S. C. TITUS.