

(No Model.)

2 Sheets—Sheet 1.

C. E. SCRIBNER.
GRAVITY TELEPHONE SWITCH.

No. 330,064.

Patented Nov. 10, 1885.

Fig. 1

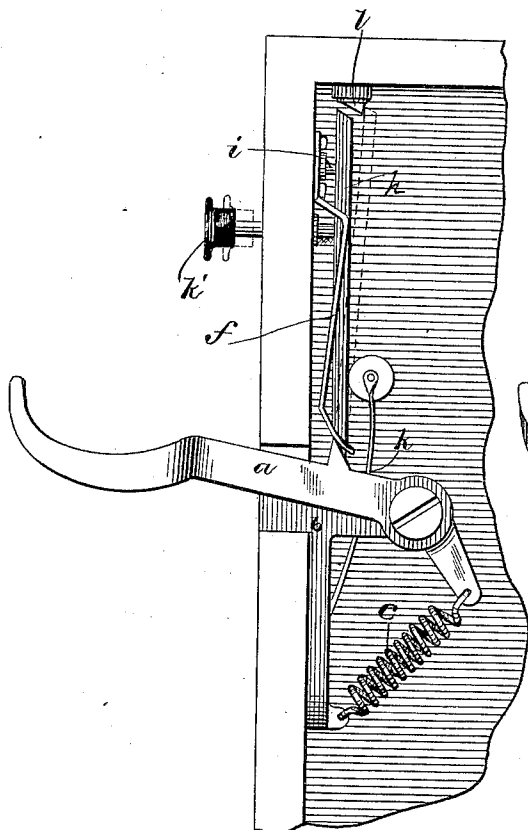


Fig. 2

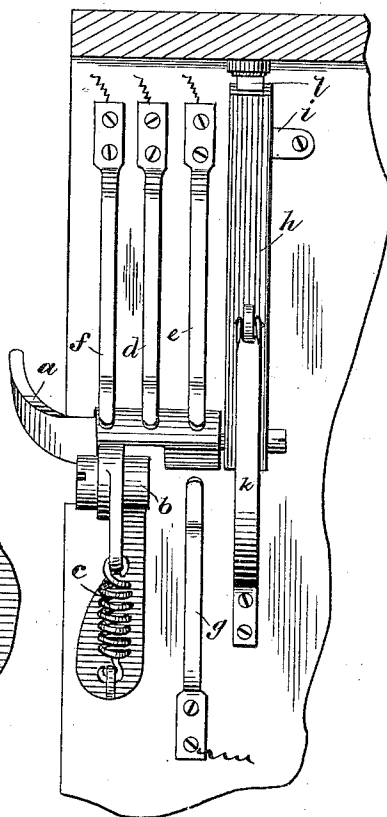
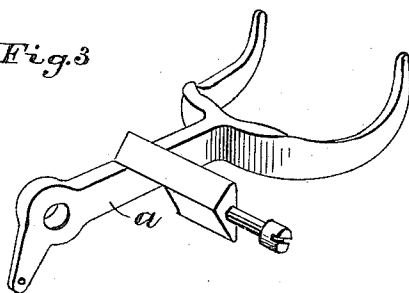


Fig. 3



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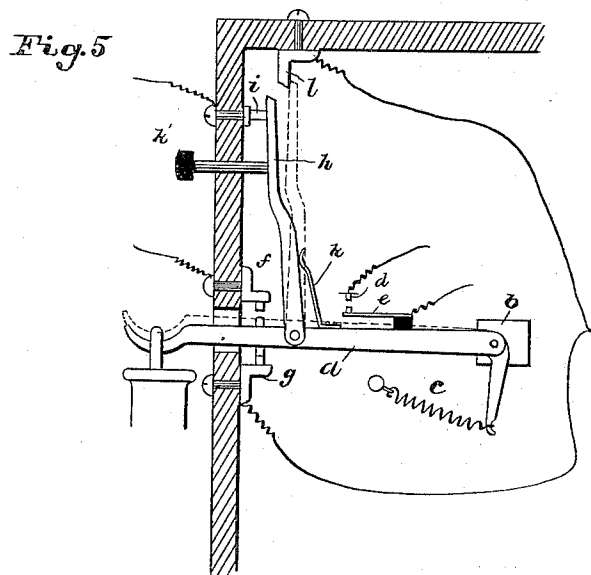
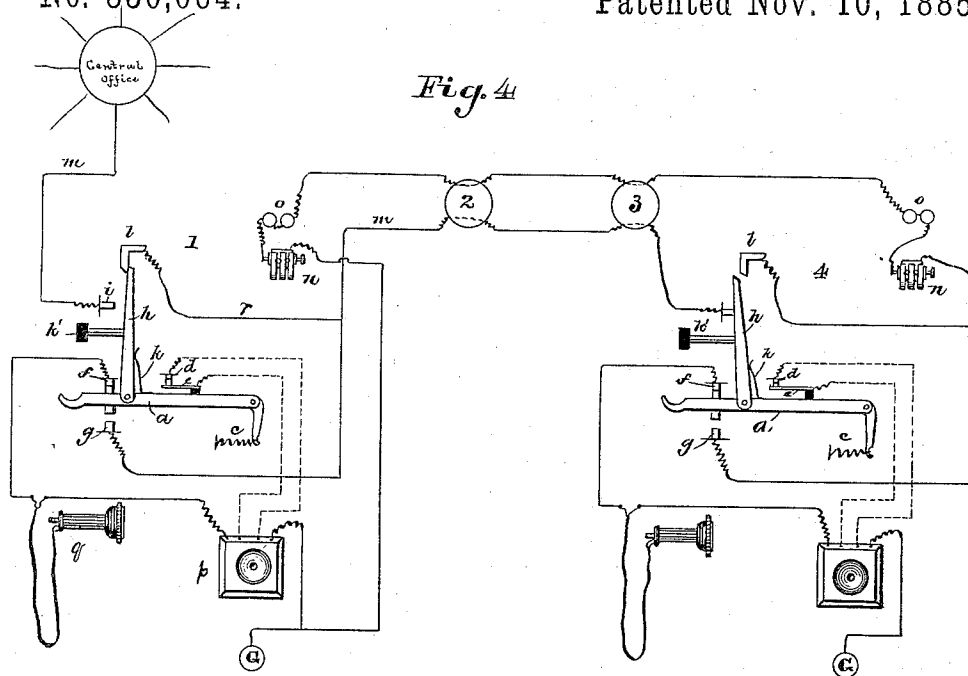
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2 Sheets—Sheet 2.

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Charles E. Scribner
By his Attorney
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UNITED STATES PATENT OFFICE.

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

GRAVITY TELEPHONE-SWITCH.

SPECIFICATION forming part of Letters Patent No. 330,064, dated November 10, 1885.

Application filed December 31, 1883. Serial No. 116,101. (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 Gravity Telephone-Switches, 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 telephone-switches; and it consists in a secrecy attachment to the gravity-switch, and is especially designed for use in combination with telephone-exchange systems in which more than one subscriber is placed upon a line. My secrecy-switch shown in Letters Patent No. 271,280, issued January 30, 1883, is especially designed for use in such systems. It has been found, however, that switches of the gravity type are better suited to the demands of the public than those in which the lever is moved positively. In switches requiring this positive movement it is necessary to teach the subscribers to move the lever in one direction for connection with the central office and in the other for connection in the other direction upon the same line.

By the use of my invention, as hereinafter described, the removal of the telephone from the switch connects the subscriber with the central office, provision being made for switching the subscriber into connection with other subscribers upon the same line when desired. The act of removing the telephone from the hook thus connects the subscriber with the central office. This is the connection required in the great majority of cases. It is therefore only in case connection is required in the opposite direction that any special work is required of the subscriber.

My switch is illustrated in the accompanying drawings. Figure 1 is a side elevation of my switch mounted upon a telephone call-box. Fig. 2 is a rear elevation thereof, showing the contact-springs. Fig. 3 is a perspective view of the lever. Fig. 4 is a diagram showing a telephone-line extending from the central office through four different subscribers' stations. Fig. 5 is an enlarged view of the apparatus at a single station of Fig. 4.

In Figs. 1, 2, and 3 like parts are indicated by similar letters of reference.

The lever *a* is pivoted to the bracket *b*, which is secured to the box in any suitable manner. The spring *c* tends to hold the lever in the position shown. The weight of the telephone is sufficient to draw the lever down against the tension of the spring. When the lever is up in the position shown, it is in contact with the three contact-springs *d e f*. When the telephone is hung on the lever, the lever is disconnected from said springs and connected with spring *g*. The springs *d e* are included in the primary circuit of the microphone. Spring *f* connects with the receiving-telephone and the secondary circuit of the microphone. Spring *g* connects with the line.

I provide an auxiliary lever, *h*, pivoted upon the switch-lever and adapted to move with the switch-lever when the telephone is placed upon or removed from the hook. The pivoted end of the auxiliary lever *h* is permanently in electrical connection with the switch-lever. The other end of the auxiliary lever is free and normally held in contact with the line contact-point *i* by the force of a flat spring, *k*. The flat spring *k* tends to hold the auxiliary lever in this position whether the telephone be off or on the hook, and in order to break this contact with point *i* the push-key *k'* is provided. This push-key bears upon the lever *h*, and when pushed inwardly causes the end of the lever *h* to come against the beveled end of the point *l*. The auxiliary lever is thus forced down, and with it the switch-lever *a*, until the end of the auxiliary lever *h* is forced beyond the contact-point *l*. By the action of spring *c* upon lever *a* the lever *h* is forced up behind point *l*, as indicated by the dotted lines. The contact with point *i* is thus broken, while a new connection is made with point *l*. When the lever *a* is brought down, as is the case when the telephone is hung on the hook, it is evident that the lever *h* cannot be brought into contact with point *l* by means of the push-button, since the free end of said lever would not extend upward far enough to touch said contact-point *l*. When, therefore, the telephone is hung on the hook, the lever *h*, if in contact with point *l*, will be at once disconnected therefrom, and the contact with point *i* will be restored. It will thus be seen that while lever *h* is closed to point *i* the circuit of point *i* will be closed through the telephone

contact-point *f* or through the line contact-point *g*, according to the position of lever *a*. It will also be seen that while the lever *a* is closed upon point *f* said point *f* will be connected either through point *i* or point *l*, according to the position of the auxiliary lever *h*.

I have so arranged the contact-points that when the weight of the telephone is taken off from the lever the telephone contact-point *f* will be closed to point *i*, with which I permanently connect the central office side of the line. This will more fully appear by reference to Figs. 4 and 5, in which I have illustrated the operation of my device in connection with a telephone-circuit, the form of my switch being somewhat modified for the sake of perspicuity. I have used the same letters of reference as far as practicable to indicate corresponding parts.

In Fig. 4 I have shown four stations, 1, 2, 3, and 4, upon a single telephone-line, the stations 1 and 4 being shown connected together for conversation. I have simply indicated stations 2 and 3.

In Fig. 5 I have shown in detail my modified form of switch mounted upon a call-box with its connections.

Suppose now the telephones at stations 1 and 4 to be hung upon the levers *a*. The circuit of line *m* would then be as follows: From the central station to point *i*, thence to lever *h* and switch-lever *a* at station 1 to point *g*, and thence, as indicated, through stations 2 and 3, and thence to point *i*, auxiliary lever *h*, and lever *a* to point *g* at station 4, from thence to the generator *n* and bell *o* at the last station back through the bell and generator at each of the other stations and to ground at the first station, as shown. It is evident that when the line is thus connected any subscriber by removing his telephone from his switch-lever automatically connects his telephone with the central office and at the same time disconnects his generator and bell and all other generators and bells of other stations from the line. Each subscriber thus may connect with the central office by simply taking down his telephone. If, however, a subscriber wishes to connect to the line in the opposite direction, he has simply to break the contact with point *i* and connect with *l*. This may be conveniently done by means of the push-button *k'*, hereinbefore described. It is only when the telephone is in use that connection with point *l* is desired, as shown at station 1, Fig. 4. The telephone-circuit at said station, as shown, may be traced from the ground through microphone *p* and telephone *q* to point *f*, and thence through the levers *a* and *h* to point *l*, and by wire *r* to line *m*. Two stations, as stations 1 and 4, upon the same line may thus be connected together, as shown. On hanging up the telephone the normal connections with the central office will be restored.

As thus described, the lever *a* of a gravity switch is looped into the telephone-line at

each of the stations, while an auxiliary lever, *h*, carried by the lever of the gravity-switch, may be connected alternatively with contact-points *i* and *l* on opposite sides, respectively, of the loop which contains the gravity-switch. The telephone included in a branch circuit to ground may thus be connected to the telephone-line in either direction at the will of the subscriber.

Having thus described my invention, I claim as new and original—

1. A telephone-switch looped into a telephone-circuit, in combination with an auxiliary lever, contact-points with which said auxiliary lever may be alternatively connected, said contact-points being on different sides of said loop, respectively, a telephone, and circuits whereby the telephone may be connected to the telephone-line in either direction at the will of the subscriber, substantially as and for the purpose specified.

2. The combination, with the gravity-switch, of the auxiliary lever pivoted thereto and beveled at its free end, and means whereby the said auxiliary lever may be brought into contact with point *l*, substantially as and for the purpose specified.

3. The combination of a gravity telephone-switch, an auxiliary switch which normally is held in contact with a point on the central-office side of the line, and means for changing the connection of said auxiliary lever to a point on the line on the other side of the subscriber's station, when the telephone is removed from the switch, the normal connection being restored automatically when the telephone is replaced upon the switch, as and for the purpose specified.

4. The telephone-switch, the telephone and signal bell and circuits at a subscriber's station, in combination with the auxiliary switch or lever and the contact-points, said auxiliary switch-lever being normally closed automatically to the contact-point in one direction on taking down or hanging up the telephone, and to the contact-point in the other direction by hand at the will of the subscriber when the telephone is not upon its support.

5. A telephone-line looped into a subscriber's station, a branch circuit to ground at said station, including the subscriber's telephone, in combination with a switching device to connect one side of said loop with the said ground branch and an auxiliary switch with its contact-points, connecting, respectively, to the two lines of the loop, whereby the said ground branch may be alternatively connected with either line of said loop while the other line is left open.

In witness whereof I hereunto subscribe my name this 21st day of December, A. D. 1883.

CHARLES E. SCRIBNER.

Witnesses:

PAUL A. STALEY,
GEORGE P. BARTON.