

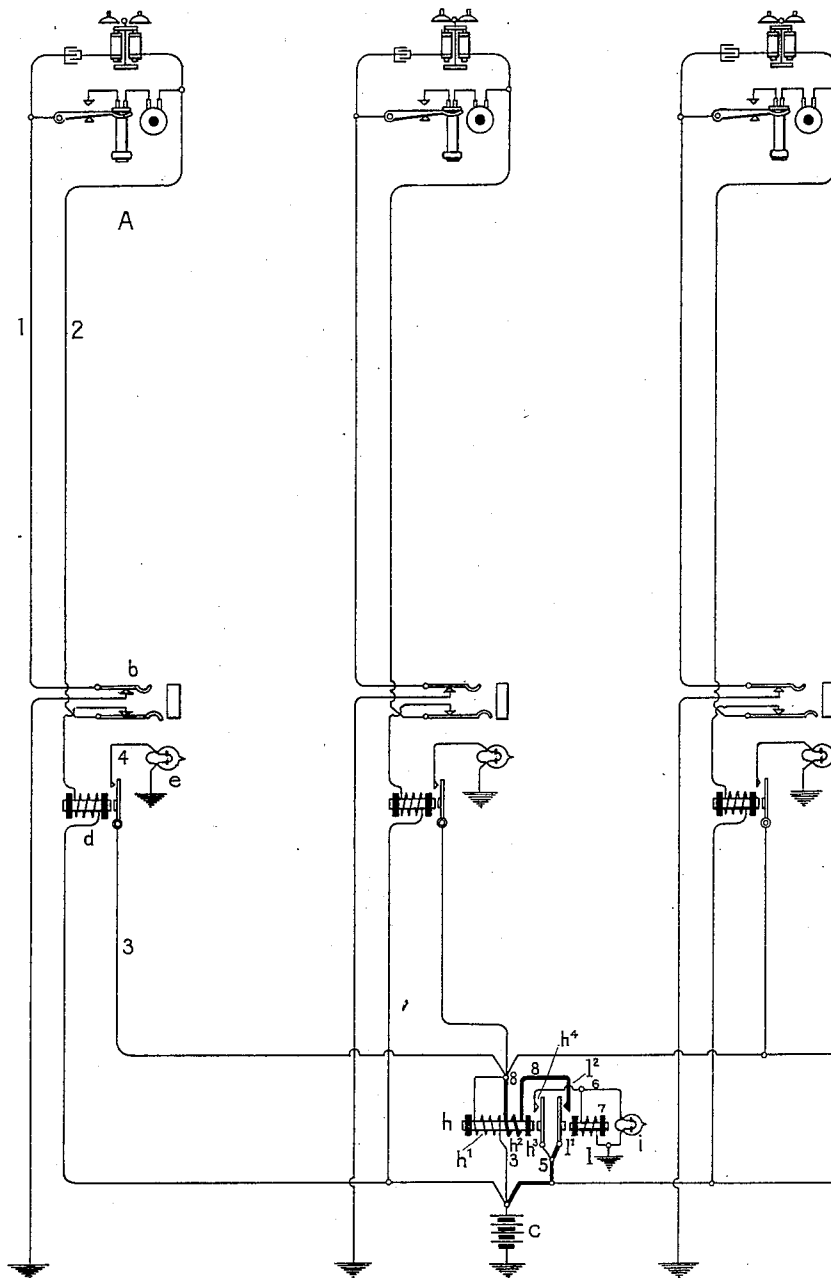
No. 650,486.

Patented May 29, 1900.

C. E. SCRIBNER.
PILOT SIGNAL FOR TELEPHONE SWITCHBOARDS.

(Application filed June 17, 1898.)

(No Model.)



Witnesses:

J. H. C. Sanner
George L. Cragg

Inventor:

Charles E. Scribner,

by

Bartholomew Brown his Attys

UNITED STATES PATENT OFFICE.

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

PILOT-SIGNAL FOR TELEPHONE-SWITCHBOARDS.

SPECIFICATION forming part of Letters Patent No. 650,486, dated May 29, 1900.

Application filed June 17, 1898. Serial No. 683,741. (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 Pilot-Signals for Telephone-Switchboards, (Case No. 460,) of which the following is a full, clear, concise, and exact description.

10 This invention concerns general or pilot signals for association with groups of individual line-signals in telephone-switchboards. It applies particularly to telephone-lines provided with means for producing a current in the line when the telephone is taken for use, together with line-signals in the switchboard responsive to such currents.

15 Prior to this invention a relay has been provided, in a circuit common to all the individual line-signals, with a winding of high resistance and a winding of low resistance, together with switch-contacts for bringing the low-resistance winding into action when the relay is made operative and with other switch-contacts and a local circuit controlled there-
20 by containing the pilot or general signal. This appliance has been found defective, however, in that the two pairs of switch-contacts of the relay are difficult of adjustment and uncertain of operation. The present invention is an improvement on this appliance. It consists in combining with the relay having two windings, one permanently in the circuit common to the different line-signals and the other normally open, a local circuit
35 containing the pilot-signal controlled by a single pair of switch-contacts actuated by the said relay, and a second relay having a single pair of switch-contacts controlling the connection of the normally-open winding of the first-mentioned relay with the circuit, the magnet of said last-mentioned relay being in the local circuit referred to. Thus the two pairs of switch-contacts actuated by the same relay are replaced by switch-contacts of separate relays, each of which is simple of adjustment and reliable in operation.

40 The invention is illustrated diagrammatically in the attached drawing, which represents a group of three telephone-lines each provided with a secondary line-signal and

with means for controlling the line-signal automatically in the use of the telephone, a pilot-signal and mechanism in accordance with the present invention being shown in association
55 with the group of lines.

Each line-circuit is normally open at its substation as respects continuous currents. At the station the telephone-circuits and the controlling-switch thereof are arranged to
60 complete the line-circuit when the receiving-telephone is removed from its switch for use. Each line is equipped at the central office with the usual spring-jack for making connection with it, with a relay responsive to current in the line determined in the use of the telephone and a secondary signal controlled
65 by the relay, the line-circuits being led to the poles of a battery common to the different lines to serve as a source of current for operating the signals. Thus line conductors 1 and 2 to station A are connected with spring-jack *b*, being normally continuous through the switch-contacts of the spring-jack. Extensions of these line conductors lead to earth
70 and to one pole of the common battery *c*, respectively, the magnet-winding of a relay *d* being included in line conductor 2. This relay controls the continuity of a local circuit made up of conductors 3 and 4, the latter of
75 which includes a secondary signal *e*, which is associated with the spring-jack of the line in the switchboard. The former conductor is common to the different lines of the group and extends to the free pole of the grounded
80 battery *c*. In applying the present invention to such a group of telephone-lines a winding *h'* of a relay *h* is interposed in the common conductor 3 of the local signal-circuits. This winding should preferably be of comparatively-high resistance, five ohms being sufficient. The switch-contacts *h*³ *h*⁴ of relay *h* control the continuity of a local circuit 5 6,
85 which includes the pilot-lamp or general signal *i*. Conductor 5 leads from the contact-lever *h*³ of the relay to the battery *c*, while the other conductor 6 is connected with earth through the pilot-signal *i*. The magnet-winding of a second relay *l* is interposed in a branch 7 of conductor 6 in multiple with the
90 pilot-signal. The switch-contacts *l*¹ *l*² of this relay control the continuity of a wire 8, which

includes a winding h^2 of the relay h . This winding should be of very low resistance, one-tenth of an ohm being sufficient.

The different individual line-signals are distributed over considerable areas in the switchboard, so that they are not under the constant observation of the attendant. The pilot-signal i should be a large and striking signal placed in a conspicuous position in the switchboard in order that its display may instantly attract the attention of the operator.

The removal of a telephone at any station of the group from its switch permits the battery c to create a current in the line, which excites the corresponding relay d and thus effects the closure of the local circuit controlled by that relay. The closing of this local circuit permits current to flow from battery c through conductors 3 and 4. This current may be insufficient to illuminate the signal e of the line, but will excite the high-resistance winding of magnet h and will thus bring about the closure of the local circuit 5 6. The closure of the local circuit 5 6 causes the display of the pilot-signal i and simultaneously brings about the excitement of the relay l , which, closing its contact-points, completes the branch 8 through the low-resistance winding h^2 of relay h . Now sufficient current flows in the circuit 3 4 to light the

secondary line-signal e of the calling line. If the current in the calling line be now interrupted, the current through the circuit 3 4 will be broken at the line-relay d , whereupon the relay h will become inert and will permit the extinction of signal i and the demagnetization of relay l .

I claim as the invention—

The combination with telephone-lines and means for producing current in the lines in the use of the telephones, a line-relay for each line responsive to such current, a local circuit controlled by each relay, and a secondary line-signal therein, of a relay having a high-resistance winding in a conductor common to said local circuits, a second local circuit and a pilot-signal included therein controlled by said relay, a low-resistance winding of the said relay connected with the local circuit of the secondary signals, and a relay in the local circuit with the pilot-signal controlling the continuity of the circuit through said low-resistance winding, substantially as described.

In witness whereof I hereunto subscribe my name this 31st day of January, A. D. 1898.

CHARLES E. SCRIBNER.

Witnesses:

ELLA EDLER,
MYRTA F. GREEN.