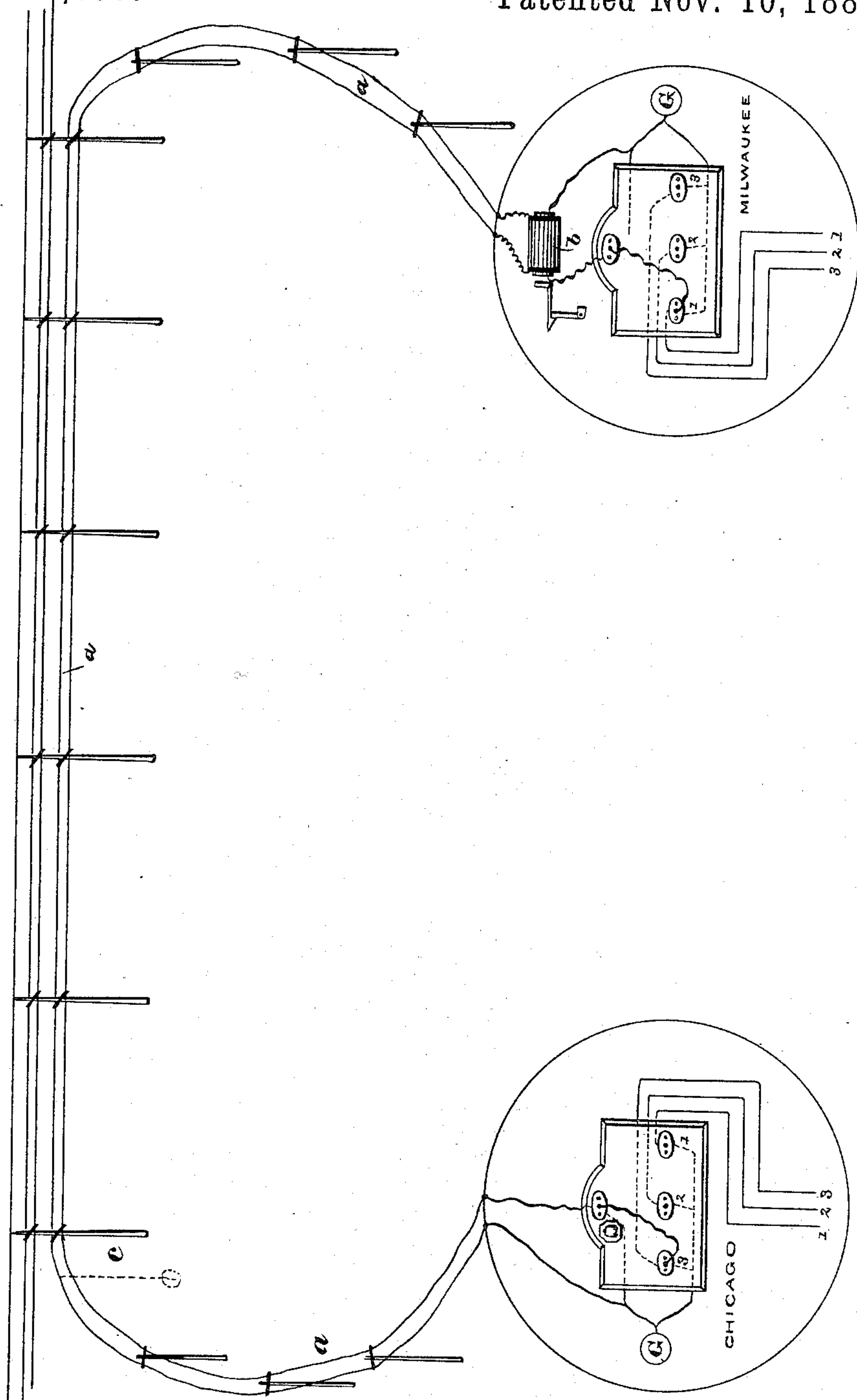


(No Model.)

C. E. SCRIBNER.
TELEPHONE EXCHANGE SIGNAL.

No. 330,057.

Patented Nov. 10, 1885.



Attest
Paul A. Staley
Charles Warren

By

Inventor
Charles E. Scribner
Henry P. Barton
Attorney

UNITED STATES PATENT OFFICE.

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

TELEPHONE-EXCHANGE SIGNAL.

SPECIFICATION forming part of Letters Patent No. 330,057, dated November 10, 1885.

Application filed May 5, 1883. Serial No. 94,063. (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 Telephone-Exchange Signals, 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 consists of an induction-coil and telephone-lines, one through each of the coils, and an annunciator-drop operated by the soft-iron core of the induction-coil when energized by current sent over one of the telephone-lines.

In the drawing which is illustrative of my invention I have shown two exchanges, Milwaukee and Chicago, connected by my double-circuit wire *a*. This wire extends from the ground at Chicago through an annunciator and spring-jack switch upon the Chicago switch-board. Thence the circuit may be traced out of the city to the poles which contain other wires, thence through the induction-coil *b* at the Milwaukee exchange, and thence back parallel with the first part of the circuit, as shown, and to ground. The return portion of the circuit-wire is shown grounded at Chicago. It is, however, unnecessary to continue this return portion of the circuit after it leaves the influence of the other wires. I therefore prefer to ground this wire at pole *c*, as indicated by the dotted lines.

I have shown an armature and annunciator-drop combined with induction-coil *b*. Currents passing through either winding of the induction-coil magnetize its soft-iron core and thus attract the armature and cause the shutter to fall.

The operation of my system is as follows: Suppose a Chicago subscriber asks for Milwaukee. The Chicago operator, by means of his usual outfit, sends a current to line *a*, and drops the shutter of annunciator at Milwaukee. The Milwaukee operator thereupon connects his outfit with the circuit of one winding of the induction-coil and listens. The Chicago operator thereupon connects the

spring-jack of the subscriber asking for Milwaukee with the spring-jack of the circuit-wire, by means of a cord with terminal plugs, or in any other well-known way, as shown. A clearing-out annunciator, if desired, may be included in the circuit of the lines at Chicago in the usual manner. Subscriber 3 at Chicago may now talk to Milwaukee, and ask for the desired party. We will suppose he asks for subscriber 1. The Milwaukee operator thereupon makes the desired connection and the two subscribers are in communication, as shown.

As it is desired to have all unnecessary resistance removed from long lines, I prefer to dispense with the clearing-out annunciator and let an operator listen out in the usual manner.

As shown in the drawing, subscriber 3 of Chicago is connected with subscriber 1 of Milwaukee, and their circuits may be traced as follows: From line 3 at Chicago to spring-jack 3, thence by the flexible cord to the spring-jack of the circuit-wire, and thence to Milwaukee, and through one winding of the induction-coil back to ground at Chicago. The circuit of line 1 at Milwaukee may be traced to spring-jack 1, thence by flexible cord to the spring-jack of the circuit of the other winding of induction-coil, and thence by said circuit through the said winding of the induction-coil to ground, as shown. The telephone-current of the Chicago subscriber traverses the double-circuit wire. This wire includes one of the windings of the induction-coil. The other winding of the induction-coil is included in the circuit of the telephone-line of the Milwaukee subscriber.

The induction-coil *b*, before described, consists of two windings or coils about a soft-iron core. Current sent through either winding produces current by induction in the other winding, and at the same time charges the soft-iron core and drops the shutter. A clearing-out signal sent over one wire is received over the other by induction, while at the same time the core serves as a magnet to throw down the shutter. The induction-coil *b* thus acts as an electro-magnet and as an induction-

coil at the same time, while telephone-currents in either circuit will thus be reproduced in the other by induction. A double or metallic circuit may thus be used to connect the
5 single telephones of subscribers of different exchanges.

I claim—

The combination, with the two windings of an induction-coil of telephone-circuits, one
10 through each coil of the induction-coil, of a soft-iron core, an armature, and annunciator-

drop, whereby current sent over one line is reproduced by induction in the other, while the soft-iron core is at the same time energized to throw down the shutter.

In witness whereof I hereunto subscribe my
name this 16th day of April, A. D. 1883. 15

CHARLES E. SCRIBNER.

Witnesses:

PAUL A. STALEY,
GEORGE P. BARTON.