

(No Model.)

2 Sheets—Sheet 1.

F. E. FISHER.

TELEPHONE CALL BELL SYSTEM.

No. 383,563.

Patented May 29, 1888.

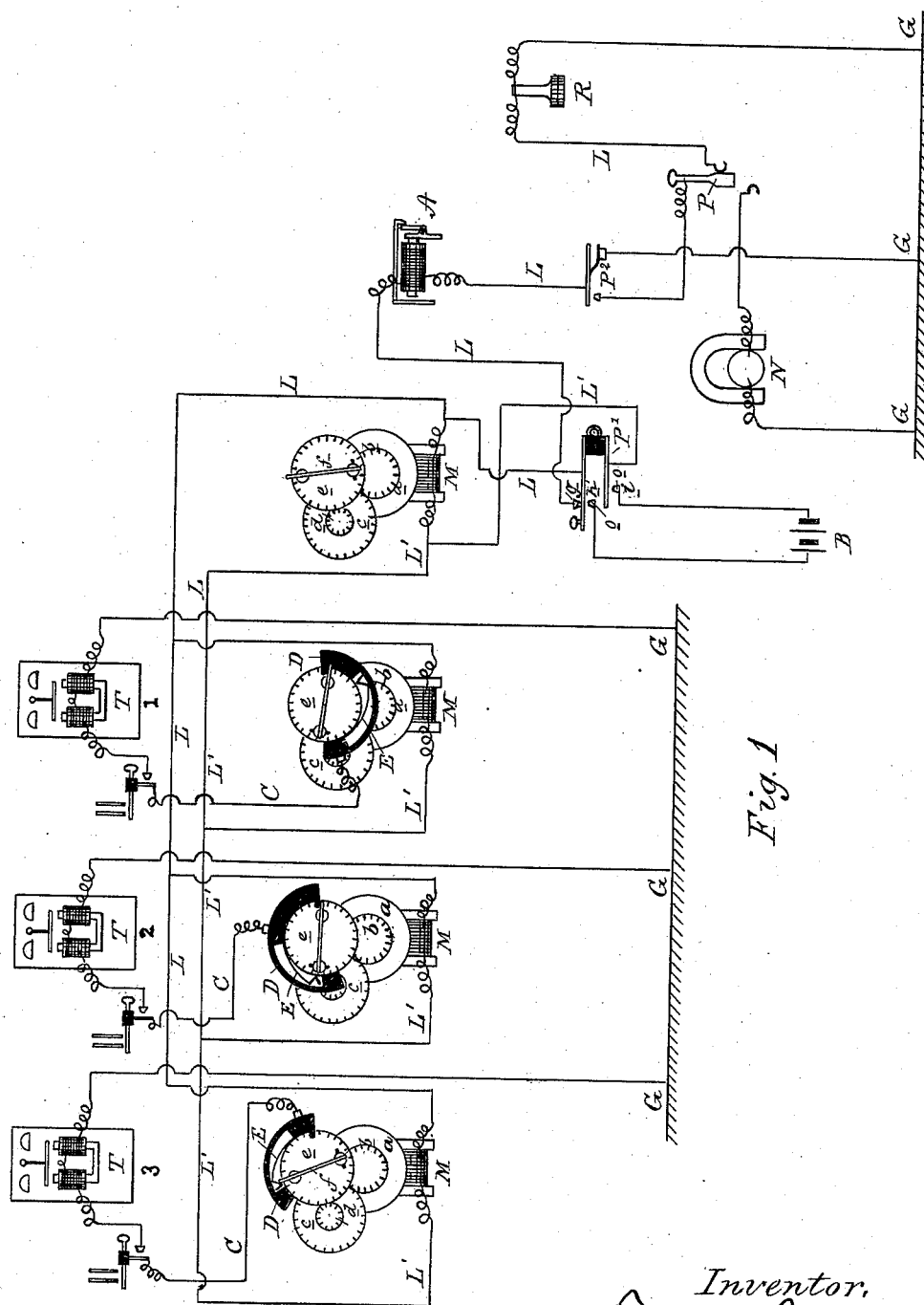


Fig. 1

Witnesses.
Geo. H. Lothrop.
Sumner Coates.

Inventor.
Frank E. Fisher.
by *Geo. H. Lothrop.*
att'y.

(No Model.)

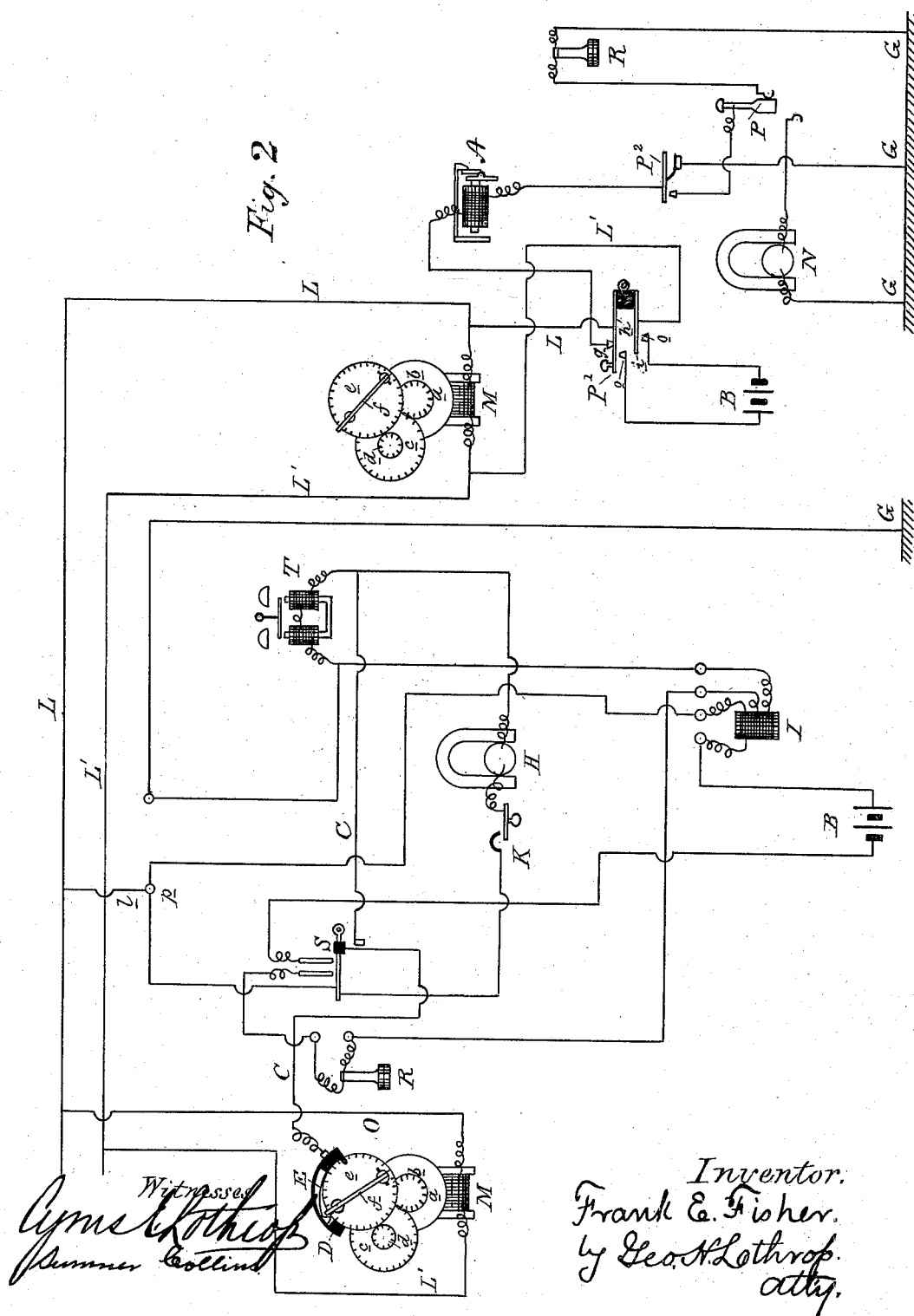
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UNITED STATES PATENT OFFICE.

FRANK E. FISHER, OF DETROIT, MICHIGAN.

TELEPHONE CALL-BELL SYSTEM.

SPECIFICATION forming part of Letters Patent No. 383,563, dated May 29, 1888.

Application filed September 15, 1885. Serial No. 177,177. (No model.)

To all whom it may concern:

Be it known that I, FRANK E. FISHER, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Telephone Call-Bell Systems, of which the following is a specification.

My invention consists in a new and useful system of telephone call-bells, hereinafter fully set forth and claimed, and is designed to permit the use of two or more telephones in circuit without ringing the bells of all the telephones to call any one of them.

In an application for a patent filed August 14, 1885, Serial No. 174,417, I described my invention as used with only a single line-wire, and the invention embodied in this application differs from that only in the use of two line-wires, one for a talking-circuit and one for a bell-operating circuit. The object of this arrangement is to reduce the resistance of the talking-circuit.

Figure 1 is an elevation of the circuit in the exchange, and with three telephone-stations in circuit; and Fig. 2 is an elevation with only one telephone, showing the connection of the talking-circuit with the telephone.

L L' represent two line-wires, L being the talking-circuit and L' the bell-operating circuit.

T represents a telephone apparatus, only the call-bell being shown in Fig. 1.

R represents a receiving-telephone. A represents an annunciator, of the kind commonly used in exchanges.

P' represents a calling-key; P², a telephone-line switch, of any kind used in telephone-exchanges, and P a key ordinarily used to connect a subscriber's line with the operator's telephone or with the generator.

The mechanism whereby the operator's telephone and generator are connected with the subscriber's line is old and well understood; hence does not require detailed description.

M represents an electric motor constructed exactly as described in my former application, above mentioned, on which is a train of wheel-work, *b c d e*, a lever, *f*, and an insulated hook-headed spring, *E*, which is in electrical connection with the call-bell circuit C of each telephone-station.

N represents a magneto-electric machine in the exchange; H, a magneto in the telephone-station; K, the key for throwing the magneto H into circuit, and S the ordinary telephone-switch used in telephone apparatus to break the talking-circuit when the receiving-telephone is hung thereon.

G represents the ground.

The line L in the exchange runs from ground, through the operator's key P, line switch P², and the annunciator A, in the ordinary manner. From thence it runs to a contact-piece, stationary, *g*, which is in contact with the upper arm, *h*, of the double calling-key P'. Line L is fastened to said arm *h*, as shown in Fig. 1, and thence runs to each telephone-station in the circuit, being connected with the binding-post *p* on each telephone by the wires *l*, and being also connected with the coil of the motor M at each telephone by the wires O, the wire O at the last telephone-station forming the end of line L. The line L' is fastened in the exchange to the lower arm, *i*, of calling-key P', and thence runs to each telephone in circuit, and is connected with the coil of the motor at each telephone by the wires L'. The battery-circuit in the exchange ends in two contact-pieces, *o o*, so placed as to come in contact with the respective arms of calling-key P' when depressed, as shown in Fig. 1.

The bell-circuit C at each telephone is normally disconnected from the line, but is grounded as usual. It is connected with the insulated spring *E*, and the lever *f* is in electrical connection with the line L, so that when the lever *f* is brought into contact with spring *E* the bell-circuit C is electrically connected with the line L.

The construction and operation of the motors M having been fully described in my former application, I do not deem detailed description thereof necessary here. To call any given telephone on the circuit—say No. 1—the operator depresses calling-key P' until the arms thereof come in contact with the contact-pieces *o o*, and this sends a continuous current from the battery B out through line L', and through the motors M, which are built to work with a continuous current. The circuit is completed through wires O and line L. When the rotation of the motors M has brought

the lever *f* on the motor connected with telephone No. 1 into contact with the insulated spring *E*, carried by said motor, which is shown by the indicator on the motor *M* in the exchange, the operator releases calling-key *P'* and stops the current from the battery. This current does not ring any of the bells, which are constructed to work with alternating currents. The operator now, by means of key *P* and line switch *P*², throws the magneto *N* into circuit with line *L*, and sends an alternating current through said line, which does not operate the motors *M*, but does ring the telephone-bells; but as the bell-circuit of each telephone is open, except that in telephone-station No. 1, which has been closed by the contact with lever *f*, only the bell in that telephone station rings. Having thus called the subscriber who has telephone No. 1, the operator converses with him and connects his line with that of another subscriber in the usual manner. The manner of restoring telephone No. 1 to its normal condition and breaking the bell-circuit is fully set forth in and forms a part of my former application. When the subscriber talks through his telephone, the talking-currents pass through line *L* only, and thus the resistance of the motors, which, when only one line-wire is used, oppose the passage of the talking-currents, is eliminated. It will be seen that one line, *L*, is directly connected with the telephone apparatus in the ordinary way, without first passing through the coils of the motor *M*, as is the case with the other line.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a telephone-station having its bell-circuit normally open, an electric motor constructed to work with a continuous current, and adapted, when set in motion, to close said bell-circuit, a line-wire connected with said motor, and a second line-wire, also connected with said motor and with the telephone, substantially as set forth.

2. In combination with a line-wire, two or more telephone-stations connected with said line-wire, and each having its bell-circuit normally open, and a continuous-current electric motor situated at each telephone and adapted to close the bell-circuit thereof, and a second line-wire, not connected directly with the telephones, said motors being connected in multiple arc with said two line-wires.

3. In combination with two or more telephones, a continuous-current electric motor located near each telephone and adapted to close the bell-circuit thereof, and two line-wires connected with each other at the farther telephone, said motors being arranged in multiple arc in said line-wires, and said telephones being connected with one of said line-wires, substantially as shown and described.

FRANK E. FISHER.

Witnesses:

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