

(No Model.)

F. R. COLVIN.
TELEPHONE SYSTEM.

No. 511,589.

Patented Dec. 26, 1893.

Fig. 1.

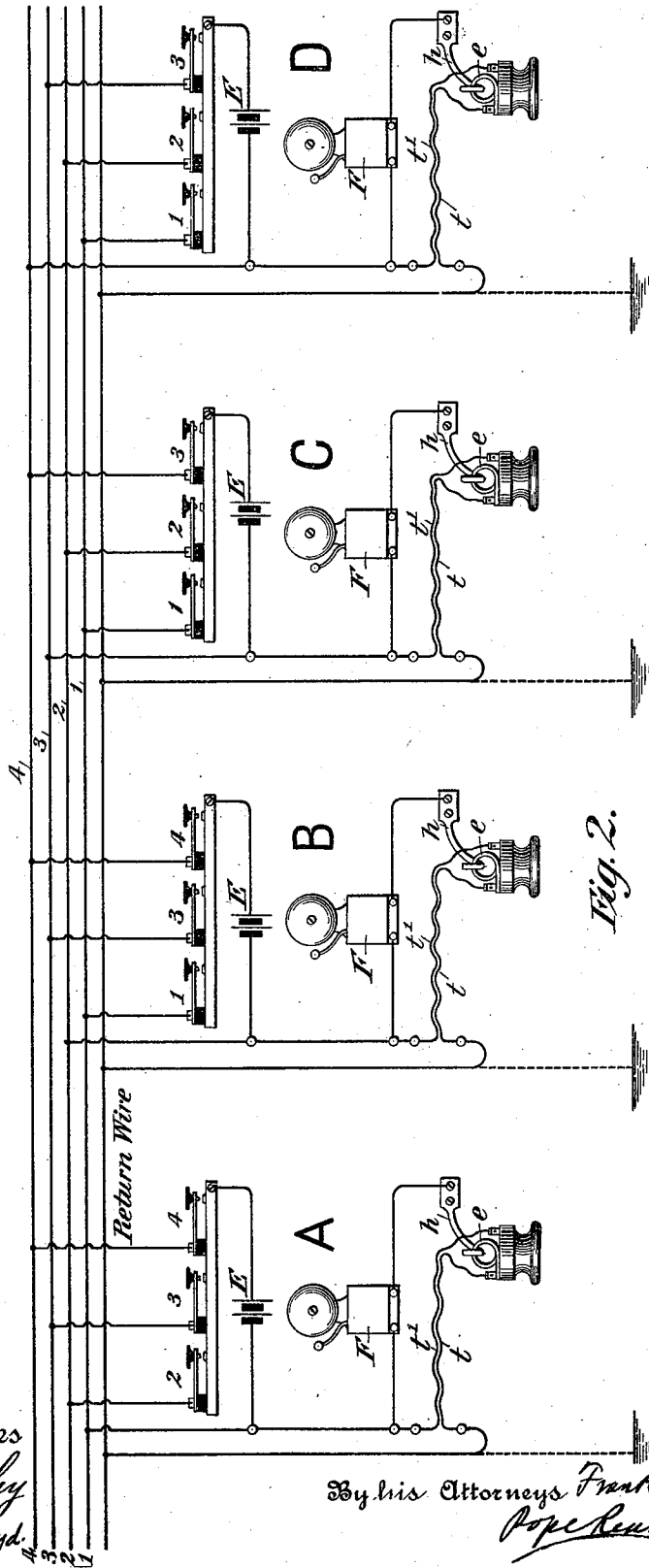
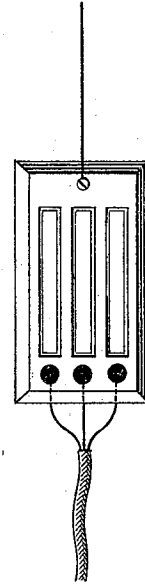


Fig. 2.



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TELEPHONE SYSTEM.

SPECIFICATION forming part of Letters Patent No. 511,589, dated December 26, 1893.

Application filed June 26, 1893. Serial No. 478,803. (No model.)

To all whom it may concern:

Be it known that I, FRANK R. COLVIN, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Telephone Systems, of which the following is a specification.

This invention relates to telephone systems and has for its object to permit telephonic intercommunication between a plurality of stations without the intermediation of a telephone exchange. The system is particularly applicable to what are known as "house" systems, where, as in a building or factory, it is important to establish intercommunication between a number of offices without incurring the expense of an exchange, with its expensive equipment and special operator, although it is also applicable to cases where there are a plurality of stations desiring mutual intercommunication distributed over a wider range of territory.

In carrying out my system I employ an independent wire for each station of the system and connect at each station, to the several wires except the wire corresponding to that station, a series of calling keys or spring-controlled circuit-closers which can only close the circuit to a particular station called while held in an abnormal position, and which, when the hand of the operator is removed, will spring into the normal position and open the circuit. The several anvils of these circuit-closers are provided with a common connection to one pole of an electric generator at each station, the other pole of which includes the station telephone normally short-circuited and connecting with ground or a common return wire for all the stations. A calling instrument is placed at each station connected to the individual wire of the station and the common return, and this branch preferably includes the short-circuit around the telephone so that when the short-circuit is open and the telephone in service the bell or other calling instrument will be out of circuit. The several circuit-closers will preferably be mounted in a portable base which may be carried by flexible conducting cords to a convenient point of a desk or table.

The several features of novelty of the invention will be more particularly hereinafter described and will be definitely indicated in the claims appended to this specification.

In the accompanying drawings which illustrate the invention, Figure 1 is a diagram of a system embodying my invention, and Fig. 2 is a plan view of the circuit-closer.

The several individual wires 1, 2, 3, 4, of the system may be carried throughout the entire system or may extend between such stations as require intercommunication. The system will be described as having all of these wires extending throughout the entire system, though it will be understood that in cases where the stations are separated a considerable distance if one or more subscribers do not need communication with all of the other subscribers only such individual wires as correspond to the stations with which communication is required need be carried to that station. The wires may be arranged in the form of a cable for convenience of handling. Four such wires suitable for a system having four stations are shown at 1, 2, 3, 4 in Fig. 1, and the several stations of the system are lettered A, B, C, D. At each station will be placed a series of circuit-closers suitably mounted on a portable stand, as indicated in Fig. 2, as many in number as there are points to be communicated with, and opposite the circuit-closers will be arranged, as shown in Fig. 2, a series of name plates upon which may be printed the names of the persons corresponding to the stations.

As there are four stations indicated in the system shown in Fig. 1, three circuit-closers at each station will permit that station to establish telephonic communication with any of the others. The circuit-closers are connected to the individual wires; for example, wire 1 corresponding to station A has at stations B, C and D a permanent connection with a circuit-closer; similarly, wire 2 corresponding to station B has permanent connections at stations A, C and D with circuit-closers at those points, and so on for the other individual wires. These circuit-closers are normally open, and their anvils have a common connection with one pole of the station battery,

as indicated at E, station A, the other pole of the battery leading to earth or to a common return wire through the station telephone which is normally short-circuited, but so arranged that when removed from its support the short-circuit will be broken. A convenient mode of effecting this result consists in providing the telephone with a metallic eye which is connected with one binding-post, which, when it rests upon a supporting hook electrically connected with the other binding-post, establishes a short-circuit, but when the telephone is lifted off the eye this short-circuit is broken, and any current flowing by way of the telephone will be forced to traverse its coils. For example, the telephone terminals or cords *t*, *t'* are connected with the battery and common return; the hook *h* connects with the battery and terminal *t'*, and the eye *e* connects with the common return and terminal *t*. The call-bell F is placed in the short-circuit F, *h* *e*, *t*. From the construction thus described it will be seen that when any station desires communication with any other, the circuit-closer corresponding to the station wanted is pressed and current will flow from the home battery through the circuit-closer to the individual wire of the station wanted, thence through the call-bell of that station, by way of the short-circuit around its telephone to the ground wire or return, and back to the calling station through the short-circuit around its telephone to the other pole of its battery. The operators remove their telephones from the supports, thus opening the short-circuit and quieting the bells, and communication between the two stations may continue so long as the operator at the calling station holds down the circuit-closer.

Any suitable transmitting and receiving outfit may be employed; as shown a combined magneto transmitter and receiver is employed, the magnetism being generated by the calling battery. When the conversation is ended the circuit-closer is released, and by reason of its being spring-controlled, opens the connections with the individual wire and restores the normal condition of affairs. It is of the utmost importance in a system of this character that the normal condition of affairs shall not by any possibility be capable of disturbance by reason of an oversight on the part of an operator; for example, if a resetting of the circuit-closer were necessary at the close of a conversation, the failure of the operator to reset it would upset the system, polarizing the battery, and until such condition was reached maintaining some station bell in continuous operation. By using circuit-closers in normally open relation and providing them with a restoring spring by which the instant the hand of the operator is removed the normal status of affairs will be re-established, annoyances due to negligence on the part of an operator are safely and simply obviated. So long as the telephone is

in use the call-bell is out of circuit. In lieu of a call-bell of course any other suitable indicator or annunciator might be employed.

What I claim as my invention is—

1. A telephone system comprising a plurality of stations, individual line wires corresponding thereto, a plurality of spring-impelled circuit closers at each station connecting with the several individual wires corresponding to the other stations of the system and in normally open relation to an electric generator, and a telephone at each station permanently connected with the individual wire of said station, whereby telephonic intercommunication may be held only while a circuit-closer is held by the operator.

2. A telephone system comprising a plurality of stations, individual line wires corresponding to the several stations and extending to a number of the other stations, a common return wire or ground, a plurality of normally open spring circuit-closers at each station each having one contact connected with its individual wire, and the other contact leading to one pole of the station battery, two normally closed branches from the other pole of the station battery, one leading to the individual wire and the other through a bell or annunciator to a common return, and a normally short-circuited telephone in operative relation to the latter branch and permanently connected thereto.

3. A telephone system comprising a plurality of stations, a plurality of individual line wires corresponding thereto, an electric generator at each station having one terminal permanently connected with two normally closed branches, one connecting with its individual wire and the other with a common return through its call-bell and telephone, and means for establishing a normal short-circuit around the telephone, and opening said short-circuit when the telephone is in service, the other pole of the station generator being connected with one set of contacts of a series of normally open circuit-closers, the other contacts of which are connected with the individual lines corresponding to the distant stations.

4. A telephone system comprising a plurality of stations, an individual line wire for each station, a series of normally open circuit-closers at each station connecting with the individual wires of other stations, a generator at each station having one pole connected with the circuit-closers, and the other pole permanently connected with two branches, one leading to the individual wire of the station, and the other through the station telephone and annunciator to a common return.

5. A telephone system comprising a plurality of stations, an individual line wire for each station, a series of normally open circuit-closers at each station connecting with the individual wires of the other stations, a generator adapted to be put into circuit with any of the individual wires, a telephone at

each station permanently connected in the station branch, and a bell or annunciator branch around the telephone terminating in two metallic contacts, one fixed and the other
5 carried by the telephone, whereby the telephone is normally short-circuited by mere engagement of the contacts.

In testimony whereof I have hereunto subscribed my name this 19th day of June, A. D. 1893.

FRANK R. COLVIN.

Witnesses:

E. C. GRIGG,

R. J. SIMES, Jr.