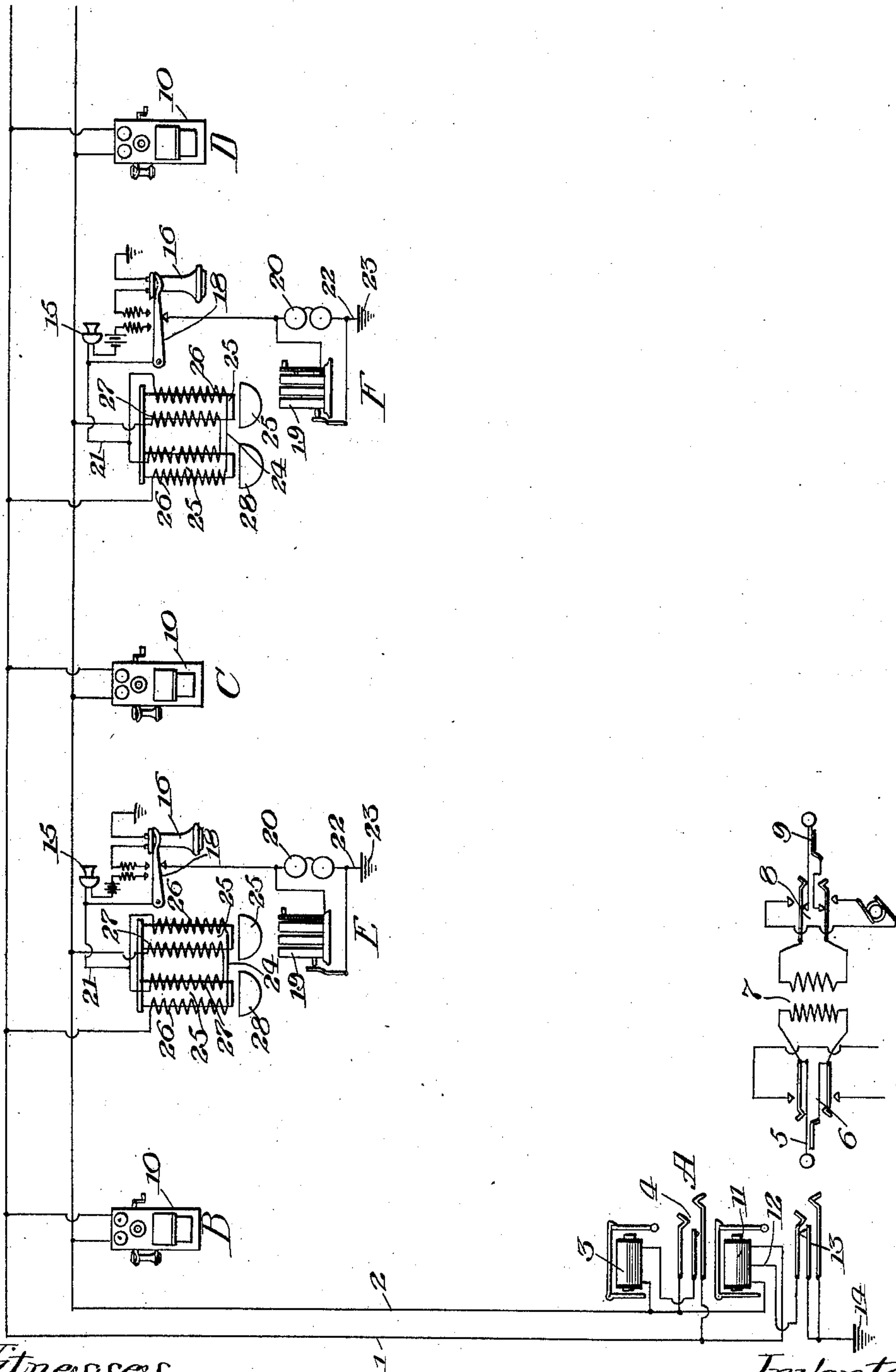


APPLICATION FILED NOV. 13, 1909.

985,186.

Patented Feb. 28, 1911.



Witnesses
Chas. Weymich
Jean Elliott.

Inventor
Oscar M. Leich
by Max W. Label
Att'y.

UNITED STATES PATENT OFFICE.

OSCAR M. LEICH, OF GENOA, ILLINOIS, ASSIGNOR TO CRACRAFT-LEICH ELECTRIC COMPANY, OF GENOA, ILLINOIS, A CORPORATION OF ILLINOIS.

TELEPHONE SYSTEM.

985,186.

Specification of Letters Patent.

Patented Feb. 28, 1911.

Application filed November 13, 1909. Serial No. 527,861.

To all whom it may concern:

Be it known that I, OSCAR M. LEICH, citizen of the United States, residing at Genoa, in the county of Dekalb and State of Illinois, have invented a certain new and useful Improvement in Telephone Systems, 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 systems, and has for its object the provision of novel means, whereby additional service can be supplied from a metallic telephone line, and consists in the preferred embodiment thereof in providing a plurality of ordinary telephone instruments in bridge of a metallic line, and a second set of telephones so arranged that they are used over said metallic circuit, but the talking currents do not traverse said circuit metallically, but traverse the two conductors thereof in parallel. Novel means are employed for effecting this connection, both at the substations and at the central station.

I will describe my invention more in detail by reference to the accompanying drawing, illustrating one embodiment thereof.

In this drawing, I have shown line wires 1 and 2, which end at a central station in a drop 3, bridged across said metallic circuit normally, and a jack 4. In association with the jack, I employ a plug 5, operator's listening key 6, repeating coil 7, operator's ringing key 8, and the answering plug 9. At various substations, B, C and D, I show ordinary bridging telephones 10, 10, which are directly in bridge of the metallic circuit wires 1 and 2, and which telephones 10 are connected in the ordinary well-understood manner, to operate in connection with the drop 3 and jack 4, which bridging telephones are provided with necessary means for sending metallic signals to operate the drop, as well as the bells associated with each bridging telephone. I find that it is of great service in connection with bridging telephone lines of the type above outlined, and of which there are many in service, to add appliances whereby to accommodate two or more subscribers with the same line, who are desirous, principally, of using the telephone for local service between themselves, and yet have their connections and the cen-

tral station equipment so arranged that if occasion offers, the central station may be reached and through service obtained through the central station. These telephones are shown at stations E and F, and are designed to operate over the line wires 1 and 2, in parallel, using the ground as a return circuit. To accommodate telephone service of this kind through the central station, I provide a drop 11, which, as shown, is connected so that the terminals of its winding are attached to the line wires 1 and 2, and a central portion of its winding is connected by means of a conductor 10 to the jack 13 to ground at 14. It will be seen that the jack 13 is so arranged that when the plug 5 is inserted, the jack and cord circuit are in such condition that talking service can be had over the two line wires 1 and 2, in parallel, and this can be carried on, even though the jack 4 is used for talking service over the line wires 1 and 2, metallically.

In connection with the drop 11 and jack 13, the telephones at stations E and F co-operate, and these telephones have the customary transmitter 15, receiver 16, the switchhook 18, generator 19, and magneto bell 20. The telephonic circuit which begins with conductor 21, and ends with the conductor 22, connects, as is seen, between the ground 23 and the central or intermediate portion of the winding of a ringer 24, which I prefer to employ, which ringer has two cores, 25, 25, each core having two windings, 26 and 27, the windings 27 being directly in series and the windings 26 being directly in series, and the two being then serially included in bridge of the conductors 1 and 2, the conductor 21 connecting with said ringer windings between the coils 27 and the coils 26. I can use the gongs 28 of the ringer to receive metallic signals, if desired. It will be seen from this that the stations E and F can communicate among themselves without disturbing the remaining stations, and yet, if desired, they can talk through the central station through the agency of the drop 11 and jack 13. It will be noted that the ringer 24 serves the double purpose of indicating metallic calls, and also as a winding, to permit of this dual service.

While I have herein shown and described the preferred embodiment of my invention,

I do not wish to limit myself to the precise construction and arrangement as herein set forth, but

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. A telephone system having a central station united by a metallic line circuit with a plurality of substations, bridging telephone instruments at some of said substations bridged to said metallic circuit, a signal-receiving device at the central station responsive to calls from said bridging telephones, a second set of telephones also associated with said line circuit, a signal receiving device provided for each telephone of the second set whose winding associates its companion telephone to the line circuit aforesaid, said telephones adapted for use over the two wires of the metallic circuit in parallel and a return circuit, and a signal-receiving device at the central station in combination with interconnecting devices also operable only over the said two wires in parallel and a return circuit.

2. A telephone system having a central station united by a metallic line circuit with a plurality of substations, bridging telephone instruments at some of said substations bridged to said metallic circuit, a signal-receiving device at the central station responsive to calls from said bridging telephones, a second set of telephones also associated with said line circuit, said telephones adapted for use over the two wires of the metallic circuit in parallel and a return circuit, a signal actuating winding bridged across said line circuit for each of said second set of telephones and between whose neutral point and the return circuit the associated telephone is connected, and a signal-receiving device at the central station in combination with interconnecting devices also operable only over the said two wires in parallel and a return circuit.

3. A telephone system having a central

station united by a metallic line circuit with a plurality of substations, bridging telephone instruments at some of said substations bridged to said metallic circuit, a signal receiving device at the central station a plurality of substations, bridging telephones, a second set of telephones also associated with said line circuit, said telephones adapted for use over the two wires of the metallic circuit in parallel and a return circuit, a winding having four coils bridged across said line circuit for each of said second set of telephones and between whose neutral point and the return circuit the associated telephone is connected, and a signal-receiving device at the central station in combination with interconnecting devices also operable only over the said two wires in parallel and a return circuit.

4. A telephone system having a central station united by a metallic line circuit with a plurality of substations, bridging telephone instruments at some of said substations bridged to said metallic circuit, a signal-receiving device at the central station responsive to calls from said bridging telephones, a second set of telephones adapted for use over the two wires of the metallic circuit in parallel and a return circuit, a winding having two coils and two cores bridged across said line circuit for each of said set of telephones and between whose neutral point and the return circuit the associated telephone is connected, and a signal-receiving device at the central station in combination with interconnecting devices also operable only over the said two wires in parallel and a return circuit.

In witness whereof, I hereunto subscribe my name this 30th day of October A. D., 1909.

OSCAR M. LEICH.

Witnesses:

MAX W. ZABEL,
JEAN ELLIOTT.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."