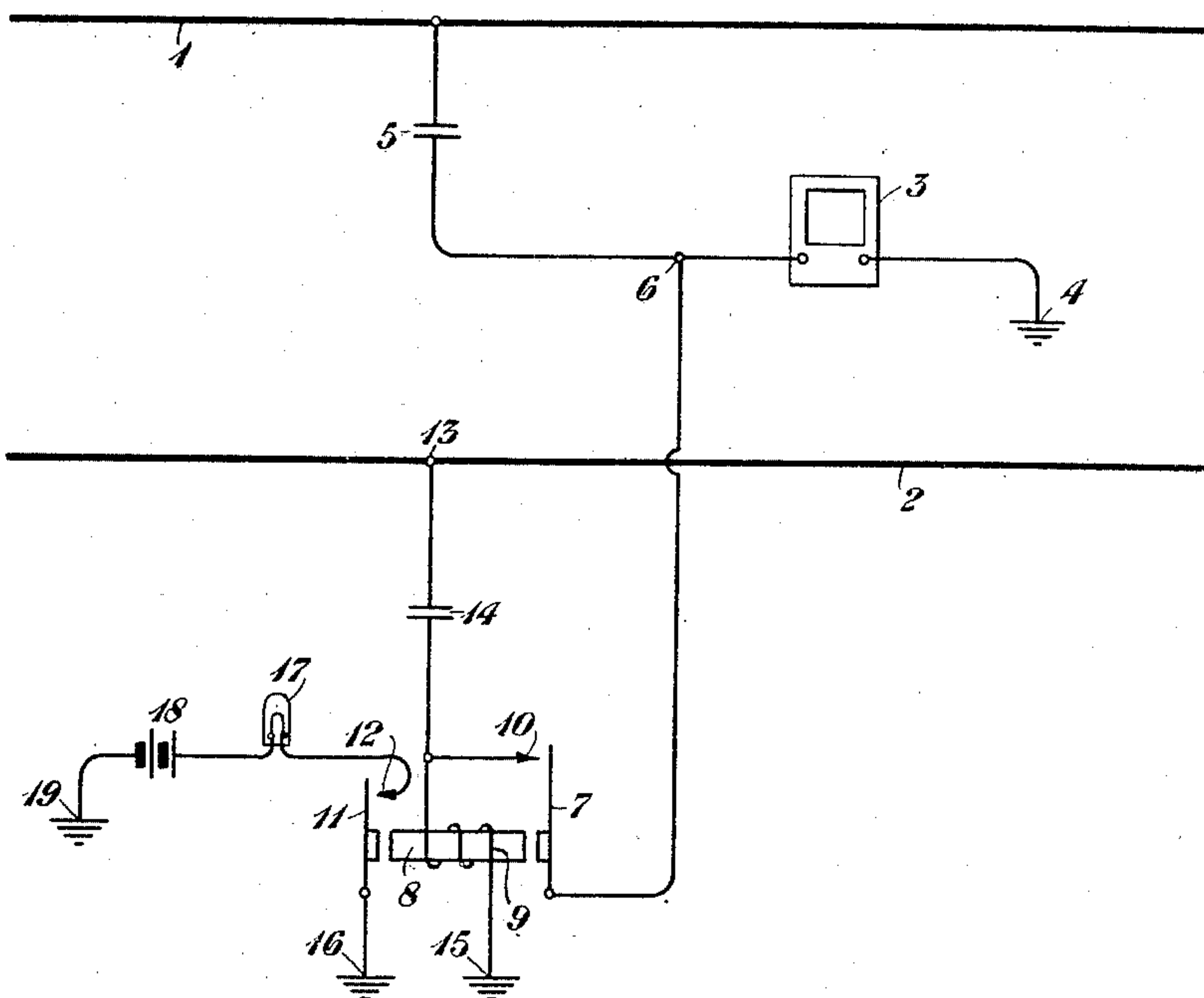


Feb. 17, 1925.

J. M. LABAUGH, JR
TWO-PARTY SIGNALING SYSTEM

Filed Feb. 21, 1923

1,526,348



INVENTOR
J. M. Labaugh, Jr.
BY *g v 40 k*
ATTORNEY

Patented Feb. 17, 1925.

1,526,348

UNITED STATES PATENT OFFICE.

JAMES M. LABAUGH, JR., OF PATERSON, NEW JERSEY, ASSIGNOR TO AMERICAN TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION OF NEW YORK.

TWO-PARTY SIGNALING SYSTEM.

Application filed February 21, 1923. Serial No. 620,521.

To all whom it may concern:

Be it known that I, JAMES M. LABAUGH, Jr., residing at Paterson, in the county of Passaic and State of New Jersey, have invented certain Improvements in Two-Party Signaling Systems, of which the following is a specification.

This invention relates to signaling systems, and more particularly to two-party signaling systems.

The object of the invention is to provide in certain classes of communication systems a signaling arrangement that will produce the desired results simply and economically.

In connection with the subscribers' telephone sets designed for use in certain commercial offices, for example, there may be required, first, the operation of a buzzer when ringing current is introduced on one side of a telephone line, and second, the operation of the buzzer and the lighting of a lamp when ringing current is introduced on the other side of the line. In attaining the necessary results, it is, of course, desirable from the standpoint of economy to reduce the apparatus employed to the minimum. Applicant's arrangement is designed to give reliable operation of the annunciator devices and at the same time to reduce to the minimum the apparatus required. The circuits are extremely simple, and no source of current is employed for the operation of the common buzzer other than the central office ringing current source.

Applicant's invention will be clearly understood upon consideration of the following detailed description of one desirable arrangement of the system. This description is to be read with reference to the accompanying drawing, in which the single figure shows schematically the illustrative desirable arrangement. It is understood that the scope of the invention is not limited by the arrangement here shown, but is to be determined by the appended claims.

With reference to the details of the drawing, 1 and 2 are the first and second wires of a telephone line, respectively, 3 is an alternating current buzzer connected between the wire 1 and the ground at 4. Between the line wire 1 and the buzzer 3 there is introduced a condenser 5, whose function will be well understood by those skilled in the art. A point 6 between the buzzer 3 and the condenser 5 is connected by a wire to

the armature 7, which armature is designed to operate as part of an alternating current relay. This relay comprises a core 8, a winding 9, the said armature 7, which is designed to make contact with the point 10 upon the operation of the relay, and a second armature 11, designed to make contact with the point 12 upon operation of the relay. The relay winding 9 is connected to the second line wire 2 at a point 13, and there is introduced between the relay and the line wire 2 a condenser 14, functioning in the same well known manner as the condenser 5 referred to above. At its other end the winding 9 is grounded at 15. The armature 11 is also grounded, at 16. In series with a wire leading from the contact point 12 there are introduced a signal lamp 17 and a battery 18, this battery being grounded at 19.

The operation of the system is as follows:

(1) If a ringing current is introduced over the line wire 1, this alternating current passes through the condenser 5 to the point 6. Since the relay is not operated, the circuit is open at 10, and no current will flow from the point 6 through the armature 7; consequently, this current introduced over the line wire 1 must flow to ground at 4, passing through and operating the buzzer 3 without any effect on the lamp 17.

(2) Now suppose a ringing current to be introduced over the line wire 2. This current will flow from the point 13 through the condenser 14 and the relay winding 9 to ground at 15 and will energize the core 8 of the relay. Energized, this core 8 will attract the armatures 7 and 11, causing the armature 7 to make contact with the point 10 and causing the armature 11 to make contact with the point 12. Consequently, on the one side, ringing current will flow through the armature 7, past the point 6, and to ground at 4, passing through and operating the buzzer 3. On the other side, when the armature 11 makes contact with the point 12, it closes a circuit between the two ground points 16 and 19, which circuit includes the battery 18 and the signal lamp 17. This circuit being closed, current from the battery 18 will flow to ground at 16 and at 19, passing through and lighting the lamp 17, which lies between the battery and the ground point 16.

Thus a ringing current in the wire 1 will

operate only the buzzer 3, while a ringing current in the wire 2 will operate the buzzer 3 and also cause the lamp 17 to be lighted, the results desired respectively in the two cases.

What is claimed is:

1. In a two-party signaling system including two line wires in either of which a ringing current may be introduced, an annunciator connected between the first line wire and the ground, an open circuit including a grounded battery and a second annunciator connected in series, and means connected with the second line wire for simultaneously operating the first annunciator and closing the circuit in response to ringing current in said second line wire.

2. In a two-party signaling system including two line wires in either of which a ringing current may be introduced, a buzzer connected between the first line wire and the ground, an open circuit including a grounded battery and a signal lamp connected in series, and means connected with the second line wire for simultaneously operating the buzzer and closing the circuit in response to ringing current in said second line wire.

3. In a two-party signaling system including two line wires in either of which a ringing current may be introduced, a

grounded buzzer so connected as to be directly actuated by ringing current in the first line wire and indirectly actuated by means of a relay responsive to ringing current in the second line wire, and a circuit including a battery and a signal lamp, said circuit being closed upon the actuation of said relay responsive to ringing current in the second line wire.

4. In a two-party signaling system including two line wires in either of which a ringing current may be introduced, a buzzer of which one side is connected through a condenser to the first line wire and the other side is connected to ground, a grounded battery and a signal lamp connected in series, an electromagnet including a winding connected through a condenser to the second line wire at one end and grounded at the other end, an armature operated by said electromagnet, said armature upon operation connecting the buzzer with the second line wire, and a second armature operated by said electromagnet, said second armature upon operation completing a grounded circuit including said grounded battery and said signal lamp.

In testimony whereof, I have signed my name to this specification this 20th day of February, 1923.

JAMES M. LABAUGH, JR.