

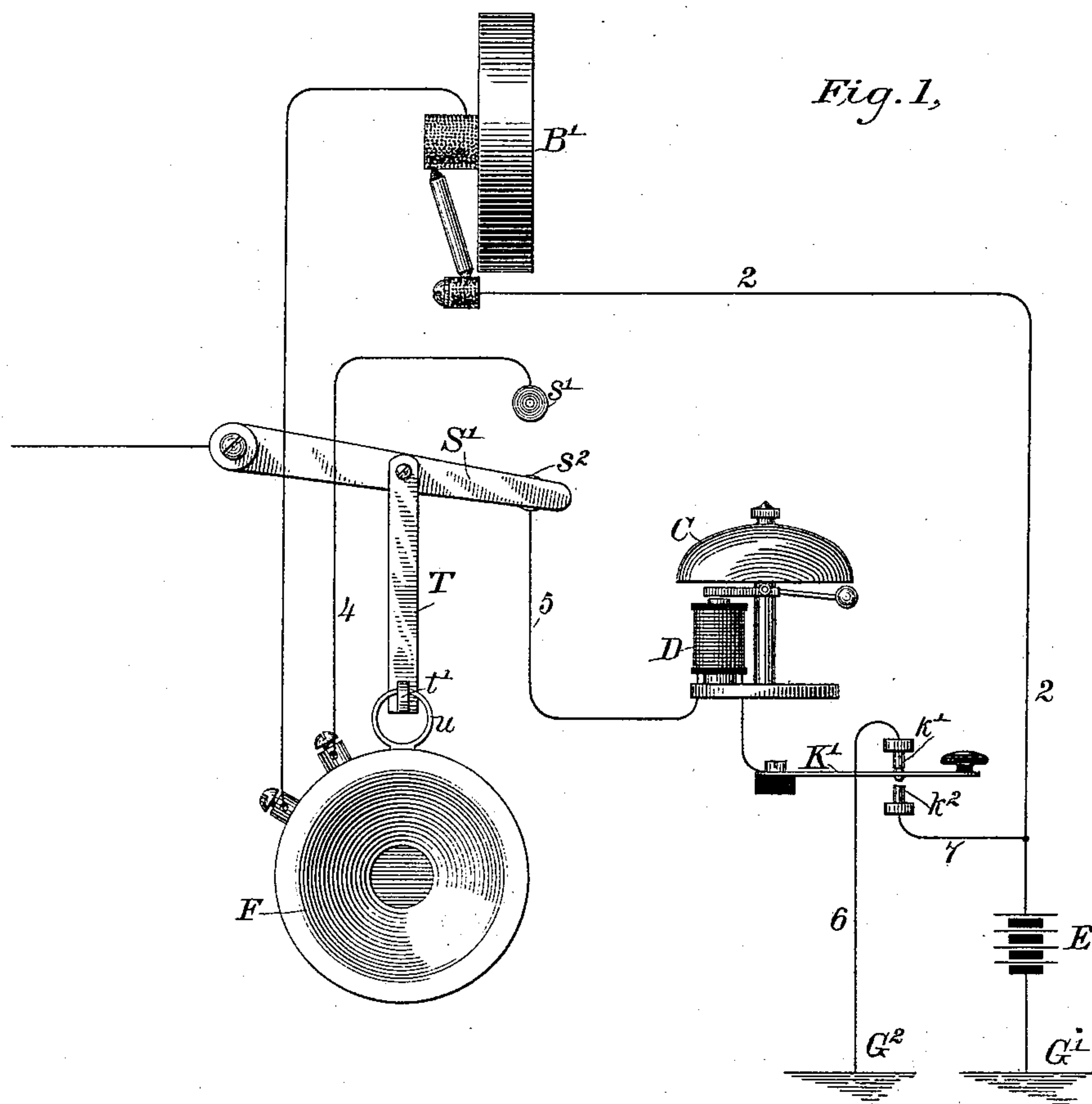
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3 Sheets—Sheet 1.

T. F. TAYLOR.
TELEPHONIC APPARATUS.

No. 310,094.

Patented Dec. 30, 1884.



Witnesses

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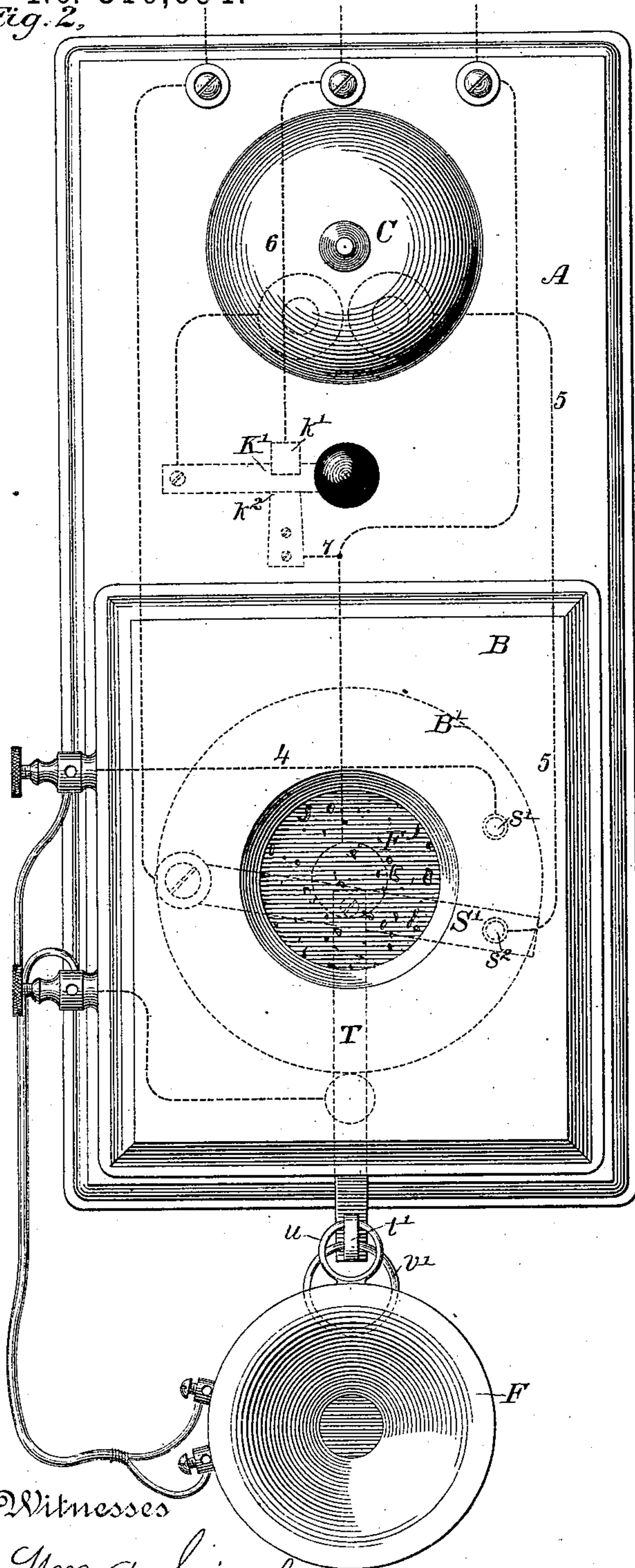
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Fig. 2.

Patented Dec. 30, 1884.



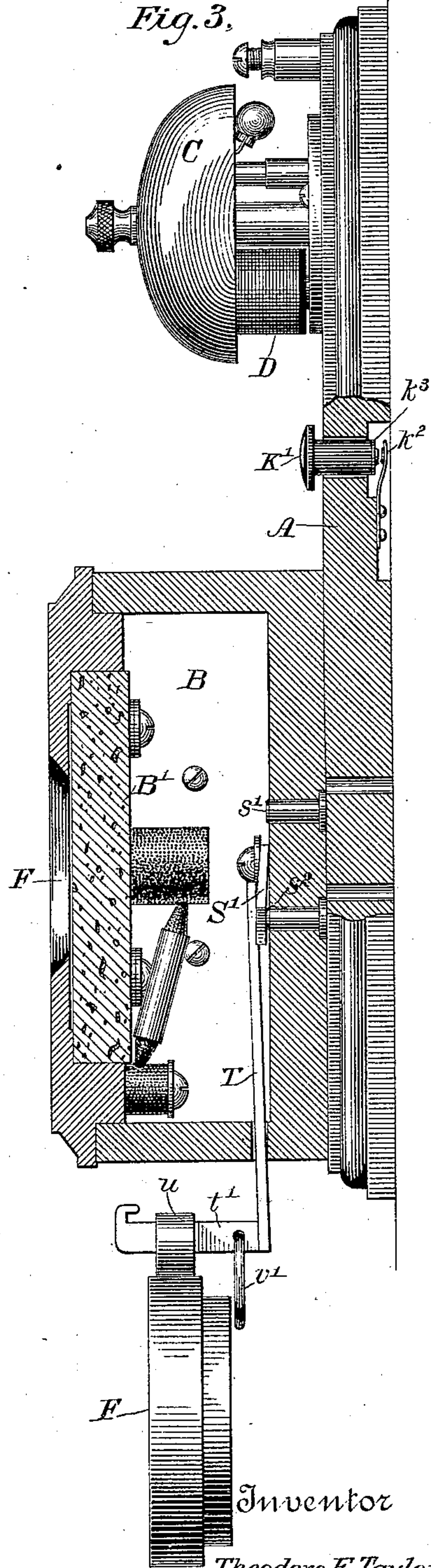
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Fig. 3.



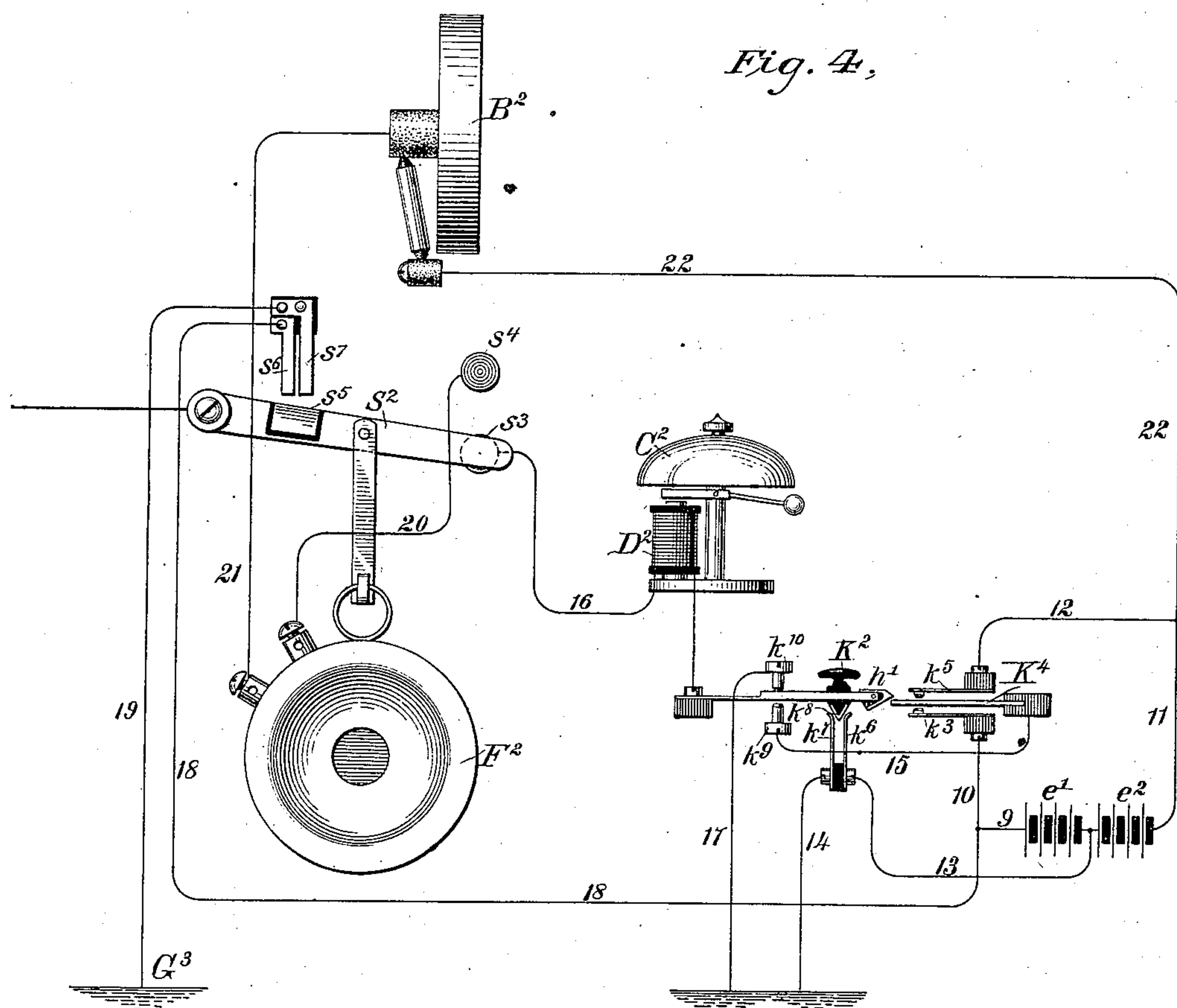
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UNITED STATES PATENT OFFICE.

THEODORE F. TAYLOR, OF BROOKLYN, NEW YORK.

TELEPHONIC APPARATUS.

SPECIFICATION forming part of Letters Patent No. 310,094, dated December 30, 1884.

Application filed July 30, 1884. (No model.)

To all whom it may concern:

Be it known that I, THEODORE F. TAYLOR, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Telephonic Apparatus, of which the following is a specification.

The invention relates to the organization of circuits and apparatus for telephone systems.

10 The object of the invention is to provide convenient devices and apparatus for signaling different subscribers of a telephone system, and establishing circuits for intercommunication.

15 In carrying out the invention the apparatus is organized in substantially the following manner: Upon a suitable supporting-case there is carried a transmitter of any convenient form, preferably of the general character known as the "Hughes" transmitter, a signaling-bell, a circuit-closing device, and a switch. In the normal condition of the apparatus the main-line circuit passes through the coils of the signaling-bell and to the earth. 20 By simply operating the key, however, a battery is connected with the main line, the current of which serves not only to actuate the bell at the home station, but whatever other bells may be upon the main line. When it is desired to place the transmitting-instrument also in circuit, it is accomplished by first removing the receiver from a suitable hook upon which it hangs, and then placing the switch in contact with a point connected both through the receiver and the transmitter with the battery. When the receiver is supported upon the hook, it serves to retain the switch out of this latter position, completing the circuit-connections through the signaling-bell in 30 the manner described.

40 For the purpose of conveniently signaling the various subscribers, or signaling from a sub-station to the central office, a vibrating reed may be employed, which, by the depression of the key, is set in operation, and is so organized that it will thus transmit alternating positive and negative electric impulses through the coils of the magnets applied to the vibrating bells. This device may be conveniently constructed so that the forward motion of the push-button or key will serve to vibrate the reed, and at the same time estab-

lish an earth-connection for the batteries, while the movement of the key in the opposite direction does not actuate the reed. 55

Referring to the drawings, Figure 1 is a diagram showing a convenient organization of circuits adapted to carry out the invention. Fig. 2 is a front elevation of the telephone-case and the apparatus connected therewith, 60 and Fig. 3 is a vertical transverse section of the same. Fig. 4 illustrates a second organization of circuits which may be employed.

Referring to the drawings, A represents a suitable back, upon which is carried a microphone-box, B. In this box or case is supported any convenient form of transmitter—such, for instance, as the Hughes microphone—the details of which need not be herein more fully described. A signaling-bell, C, designed 70 to be actuated by an electro-magnet, D, is also carried upon the back A of the case. The organization of such a device is well known and need not be described in detail. A battery, E, has one of its poles connected with the earth at G', while its opposite pole is connected by a conductor, 2, with the microphone B', to a transmitter, F. The receiver F is of any suitable construction, and the circuit-connections are continued from the same through 80 a conductor, 4, to a switch-point, s'. A switch-arm, S', is connected with the main line, and is designed, when the instruments are in use, to be moved into contact with the point s'. At other times, however, it rests upon a corresponding point, s², which is in electrical connection through a conductor, 5, including the coils of the electro-magnet D, with a circuit-closing key, K'. The back contact-stop k' of the key is electrically connected with the 90 earth at G² by means of a conductor, 6. Normally the key rests in contact with this stop, and thus continues the circuit-connections from the main line, through the switch S' and the conductors 5 and 6, to the earth at G². 95 When, however, the key is depressed, it is placed in contact with a stop, k², which is in connection, through a conductor, 7, with the conductor 2, leading from the battery E. A current will therefore be transmitted from 100 this battery, through the coils of the electro-magnet D, to the main line, and the bell C will be operated, as well as the other bells upon the line.

Attached to the switch S' is an arm, T , carrying a hook, t' , which is designed to serve as a support for the receiver. The receiver cannot be placed upon this hook while the arm S' is in contact with the point s' , for the reason that the hook is then drawn up against the lower side of the case B . When, therefore, the instrument has been in operation, it is necessary for the operator to re-establish the connections before he can replace the receiver in position, thus insuring that the main-line circuit shall be in the proper condition when the instrument is not in use. A ring, u , is formed upon the case of the receiver, and is designed to be placed over the hook t' . A ring, v' , is applied to the hook t' of the arm T for the purpose of conveniently drawing the switch downward for the purpose of hanging the telephone-receiver in position.

When it is desired to use the telephone, it is necessary, after signaling in the usual manner, only to remove the telephone from the hook and push the switch S' from the point s'' to the point s' , thus establishing the requisite circuit-connections.

In Fig. 4 a modification in the organization of circuits is illustrated, in which two batteries, e' and e'' , are employed. The positive pole of one of these batteries is connected through conductors 9 and 10 with a contact-spring, k^3 , applied to a vibrating reed, k^4 . The opposite pole of the battery e'' , is connected by conductors 11 and 12 with a similar contact-spring, k^5 , and applied to the opposite side of the reed k^4 . These springs are insulated from each other and from the reed. When, however, the reed is vibrated, it will make contact first with one and then with the other of the two springs, thereby connecting the two battery-sections alternately with the reed. The remaining poles of the two batteries are placed in connection through a conductor, 13, with an insulated contact or circuit closing spring, k^6 , while a corresponding spring, k^7 , is connected with the earth through a conductor, 14. When, therefore, these two springs are placed in connection with each other, an earth-connection is formed for both battery-sections. This is accomplished by means of a key, K^2 , which also serves to set in operation the reed k^4 , and to place the latter in connection with the main line through the coils of the electromagnet D^2 , which is applied to the signaling-bell C^2 . For this purpose the key K^2 is provided with a contact-surface, k^8 , of conducting material, which is adapted to enter between the springs k^6 and k^7 , and to thus place them in electrical connection with each other. At the same time the lever of the key K^2 is brought into contact with a stop, k^9 , which is connected through a conductor, 15, with the reed k^4 . The lever itself is connected through a conductor, 16, including the coils of the magnet D^2 , with a switch-point, s^3 , and this point is connected through the switch S^2 in its normal position with the main line.

Upon the end of the key K^2 is carried a piv-

oted cam, h' , which is so constructed that when the key is pressed forward the cam will strike the end of the reed k^4 , and deflect it from its normal position, and subsequently allow it to spring past the cam. The reed will thus be set in operation and vibrate between the two contact-arms. The cam h' , however, is pivoted so that by its return movement it will yield to the pressure of the reed and tip forward, allowing the key to return to its normal position without actuating the reed. The back contact-stop k^{10} of the key-lever K^2 is connected with the earth by means of a conductor, 17, so that there is normally established an earth-connection for the main line. It will be evident, however, that it is necessary in some manner to provide means for connecting both batteries with the earth when they are employed for transmission. For this purpose a conducting-segment, s^5 , is applied to the switch S^2 , and designed to move beneath two contact arms or springs, s^6 and s^7 , which are insulated from each other, and which are respectively connected with the conductor 9 by means of a conductor, 18, and with the earth at G^3 by a conductor, 19.

When the switch S^2 is moved from the point s^3 into contact with the points s^4 , the two springs s^6 and s^7 are placed in connection with each other, and thereby both batteries are connected with the earth in series. The point s^4 is connected by conductors 20 and 21, including the telephone-receiver F^2 , with the transmitter B^2 , and thence through a conductor, 22, with the batteries e'' and e' upon the side opposite to that which is connected with the earth.

The operation of the switch and the method of hanging the receiver upon the same and removing it therefrom are essentially the same as that described with reference to Figs. 1, 2, and 3.

I claim as my invention—

1. The combination, substantially as hereinbefore set forth, of a telephone-transmitter, a telephone-receiver, a signaling device, a battery, a key, a switch, a main line connected therewith, circuit-connections which are normally completed from said main line through said signaling device and key with the earth, a supporting-hook for said receiver attached to said switch, means, substantially such as described, for preventing said receiver from being placed upon said hook except when said switch is in position to establish the above-named connections, a contact-point in connection with which said switch may be placed when said receiver is removed from said hook, and circuit-connections, substantially such as described, from said switch-point through said transmitter and receiver to said battery.

2. The combination, substantially as hereinbefore set forth, of a telephone-transmitter, a telephone-receiver, a signaling device, a signaling-key consisting of a vibrating reed, a key-lever, and a device carried upon said lever for giving said reed an impulse when the key is moved in a given direction, two contact-springs applied to the respective sides of

said reed, a positive and a negative source of electricity respectively connected with said contact-springs, a main line, a switch connected with said main line, two contact-points for said switch, the first of which is connected with said signaling-key through said signaling device, while the second is connected with said telephone transmitter and receiver, a hook for receiving said telephone-receiver attached to said switch, and means, substantially such as described, for preventing said hook from receiving said receiver except when said switch is in contact with the second stop, substantially as described.

3. The combination, substantially as here-inbefore set forth, of a telephone-transmitter, a telephone-receiver, a signaling device, a signaling-key consisting of a vibrating reed, a key-lever, and a device carried upon said lever for giving said reed an impulse when the key is moved in a given direction, two contact springs applied to the respective sides of said reed, a positive and a negative source of electricity respectively connected with said contact-springs, a main line, a switch connected with said main line, two contact-points for said switch, the first of which is connected with said signaling-key through said signaling device, while the second is connected with said telephone transmitter and receiver, a hook for receiving said telephone-receiver attached to said switch, means, substantially such as described, for preventing said hook from receiving said receiver except when said switch is in contact with the second stop, substantially as described, means, substantially such as described, for normally connecting said signaling-key with the earth, and means, substantially such as described, for automatically connecting said sources of electricity with the earth when said telephonic instruments are placed in circuit.

4. The combination, substantially as here-inbefore set forth, of a telephone-transmitter, a telephone-receiver, a signaling device, a signaling-key consisting of a vibrating reed, a key-lever, and a device carried upon said lever for giving said reed an impulse when the key is moved in a given direction, two contact-springs applied to the respective sides of said reed, a positive and a negative source of electricity respectively connected with said contact-springs, a main line, a switch connected with said main line, two contact-points for said switch, the first of which is connected with said signaling key through said signaling device, while the second is connected with said telephone transmitter and receiver, a hook for receiving said telephone-receiver attached to said switch, means, substantially such as described, for preventing said hook from receiving said receiver except when said switch is in contact with the second stop, substantially as described, means, substantially such as described, for normally connecting said signaling-key with the earth, means, substantially such as described, for automatically connecting said sources of electricity with the earth when said telephonic instruments are placed in circuit, and means, substantially such as described, for temporarily placing said sources of electricity in connection with the earth through the action of said signaling-key when said vibrating lever is actuated, substantially as described.

In testimony whereof I have hereunto subscribed my name this 26th day of July, A. D. 1884.

THEODORE F. TAYLOR.

Witnesses:

DANL. W. EDGECOMB,
CHARLES A. TERRY.