

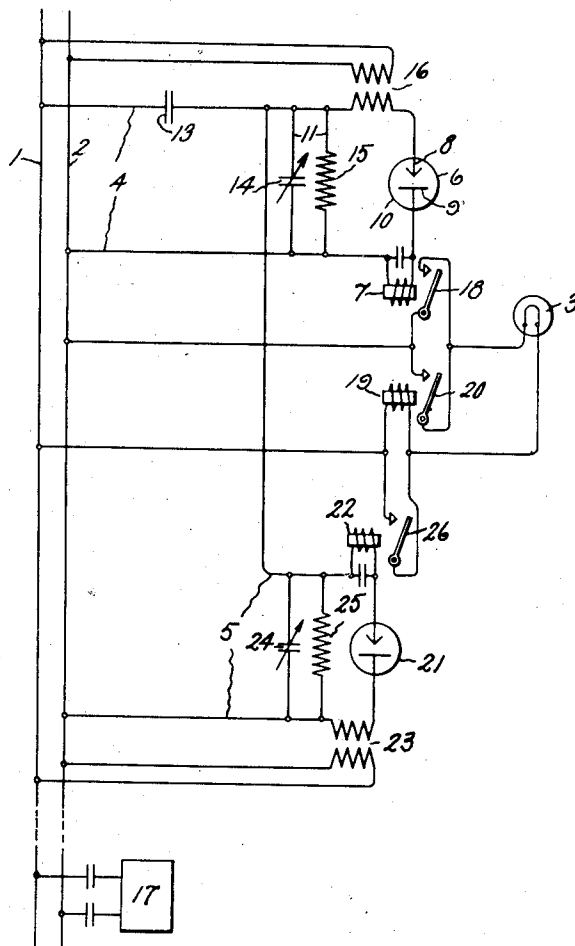
Sept. 15, 1931.

W. R. G. BAKER

1,823,718

REMOTE CONTROL SYSTEM

Filed Sept. 14, 1925



Inventor:
Walter R.G. Baker;
by *Alexander S. Lunt*
His Attorney.

UNITED STATES PATENT OFFICE

WALTER R. G. BAKER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK

REMOTE CONTROL SYSTEM

Application filed September 14, 1925. Serial No. 56,116.

My present invention relates to a system of distribution and more particularly to means for controlling a distant circuit from a central station or other point on the system without the use of additional conductors between the station and remote point.

I accomplish this result by the employment of a plurality of control circuits at the distant point. One of these circuits is adapted to be energized when a certain relatively high audio or radio frequency electromotive force is supplied to the distribution system. The other circuit is adapted to be energized when an electromotive force having a relatively high frequency, different from the first mentioned high frequency, is supplied to the system. Energization of one of the control circuits closes the remote circuit, while energization of the other control circuit governs the opening of the remote circuit.

The novel features which I believe to be characteristic of my invention are set forth with particularity in the appended claims. My invention itself, however, both as to its organization and method of operation will best be understood by reference to the following specification taken in connection with the accompanying drawing in which the figure represents diagrammatically a circuit organization whereby my invention may be carried into effect.

Referring to the drawing, I have indicated at 1 and 2 a pair of power distributing means. A remote circuit including a current consumption device 3, may be located at any point of the distribution system. To control the connection of the remote circuit with the distribution system, I employ two control circuits 4 and 5. Control circuit 4 includes an electrical space discharge device or glow tube 6, and a relay 7. The discharge device 6 comprises a pair of dissimilar electrodes 8 and 9 enclosed in a receptacle 10. The receptacle is filled with a suitable gas such as neon or other inert gas at a definite pressure, the particular gas and pressure being so chosen that if an electromotive force having a certain value is supplied to the device 6 a discharge will flow

between electrodes 8 and 9 as long as the electromotive force is maintained. Because of the dissimilar structure of the electrodes 8 and 9, however, current will flow through each discharge device in one direction only.

The glow tube and relay of control circuit 4 are connected in series across the power mains 1 and 2 and in parallel with a tuning arrangement 11. A blocking condenser 13 is inserted in each of the control circuits 4 and 5 to exclude currents of power frequency therefrom. Circuit 4 may be tuned by means of condenser 14 and inductance 15.

In the operation of the control circuit 4 to energize relay 7, a constant potential is impressed on the glow tube 6 from the alternating current distribution system by means of a transformer 16. The potential thus impressed is chosen at a value somewhat below the value at which a discharge will take place between the electrodes of the tube. When an electromotive force, having a relatively high frequency F , is superimposed on the distribution system by a transmitter 17, the discharge device 6, associated with circuit 4, will break down and allow current to flow therethrough and energize relay 7. Energization of relay 7 actuates a switch 18 to close a circuit from mains 1 and 2 through the current consumption device 3 and a holding coil 19. Energization of coil 19 closes switch 20 to maintain the circuit to the consumption device when current of frequency F ceases to flow in circuit 4.

Control circuit 5 includes a space discharge device 21 and a relay 22, similar to the discharge device 6 and relay 7 of control circuit 4. A polarizing voltage is supplied to the glow tube 21 by a transformer 23. Circuit 5 is so tuned by condenser 24 and inductance 25 that, when a different relatively high frequency electromotive force F' is superimposed on the distribution system, electrical discharge device 21 of circuit 5 will break down and allow current to flow and energize relay 22 of this circuit. Energization of relay 22 closes a switch 26 to short circuit the holding coil 19 thus permitting switch 20 to open and disconnect

the current consumption device 3 from the power mains.

While I have shown but one form of my invention various modifications thereof will readily suggest themselves to persons skilled in the art without departing from the scope of my invention as set forth in the appended claims.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. In combination, a circuit, means for controlling the closing and opening of said circuit, said means comprising a pair of tuned circuits resonant at different frequencies, each of said circuits including a capacitive element and an inductive element, a space discharge device connected across one of said elements of each of said circuits whereby the potential on said element is supplied to the space discharge device to cause operation thereof, means for supplying electromotive force having corresponding frequency to each of said tuned circuits, means controlled by one of said discharge devices for controlling the closing of said circuit, means for maintaining said circuit closed, and means controlled by the other discharge device for controlling the opening of said circuit.

2. In combination, a transmission system, a remote circuit associated with said system, a pair of tuned circuits resonant at different frequencies connected to said system, means including a space discharge device responsive to an electromotive force of one frequency supplied to one of said tuned circuits for controlling the closing of said circuit, separate electro-magnetic means for maintaining said circuit closed, and means including a space discharge device, responsive to an electromotive force of another frequency supplied to the other of said tuned circuits for controlling said separate electro-magnetic means to open said circuit.

3. In combination, a transmission system, a remote circuit associated with said system, means for controlling the closing of said remote circuit, said means including a control circuit having a discharge device and a relay connected in series, said discharge device including a pair of separate, dissimilar electrodes surrounded by an attenuated gaseous medium, and having asymmetric conductivity when broken down, means for supplying a potential to said control circuit, the value of the potential being lower than that required to break down the discharge device and cause a flow of current through the discharge device and relay, means for supplying an additional, relatively high frequency electromotive force to the discharge device to effect its operation and thereby energize the relay to close the remote circuit, and means including a second discharge device, responsive to an electro-

motive force of another relatively high frequency for controlling the opening of the remote circuit.

In witness whereof I have hereunto set my hand this 11th day of September, 1925.

WALTER R. G. BAKER.