

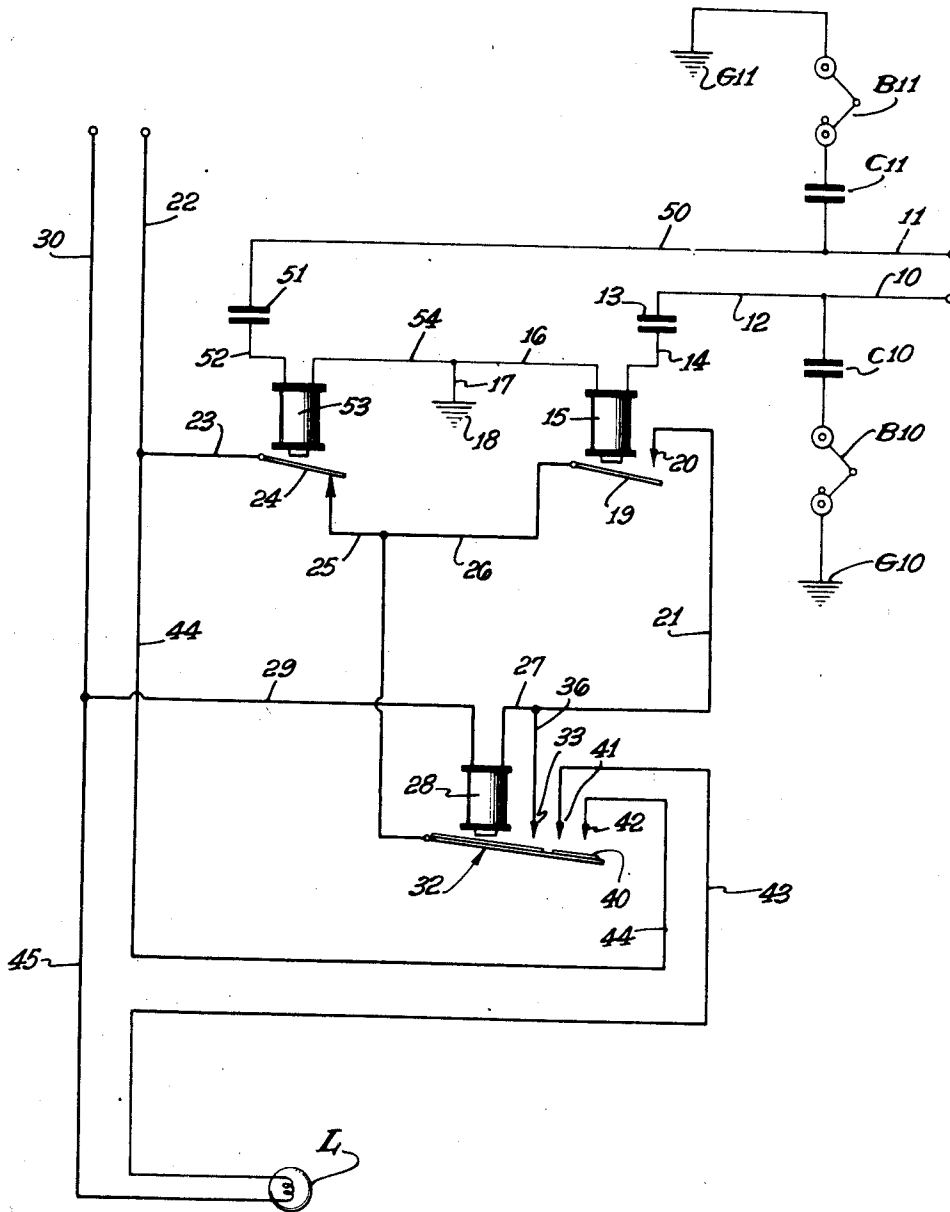
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TELEPHONE ELECTRICAL CIRCUIT CONTROL SYSTEM

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TELEPHONE ELECTRICAL CIRCUIT CONTROL SYSTEM

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4 Claims. (Cl. 179—2)

This invention relates to electrical control systems and particularly to a system adaptable for operation by a conventional divided ringing telephone line.

Broadly, my invention has the object of providing an auxiliary device whereby an electrical output circuit may be closed or opened by ringing one telephone number for closing and another number for opening.

Thus, the invention is applicable to remote control of traffic signals, street lamps, outdoor advertising signs, electric ovens, furnaces, fans, blowers and numerous other purposes as will occur to one skilled in the art.

I am aware of proposals to remotely control electrical circuits by radio but these require special sending and receiving equipment rather complicated and costly. The transmitter for such a system is especially beyond the range of most users from a cost and operating standpoint.

I am also aware of proposals to connect an automatic recording device to a telephone, but this operates only while the telephone sound circuit remains open, is for a different purpose than my invention, and the circuits thereof are not suitable for my purpose.

One of the primary advantages of my invention is that it is available to any telephone subscriber for the cost of a divided ringing, or two party, line, and the control device itself is relatively simple and inexpensive.

Thus, during wartime, blackout of traffic signals and street lamps may be effected from a central office; and may be turned on again from the same office.

Merchants may turn on or off their advertising signs by merely calling one number to turn them on, and another number to turn them off. This can be done, for example, from the merchant's residence, and has especial utility for the smaller merchant who does not have a night watchman in attendance.

My invention requires no alteration of the conventional telephone system, and the instrument embodying the control may be contained in a small housing, and is readily connectible.

It is not necessary that the telephone circuits be kept closed for continuing the control circuit in its closed or open condition. The selected telephone circuit need be closed only long enough to energize the respective relays in a manner to be described, and it is only the ringing circuits which need be applied.

The foregoing, and other objects and advantages of my invention will become further appar-

ent from a consideration of the detailed description.

The drawing is a diagrammatic wiring diagram illustrating my invention. The light lines indicate part of a standard telephone system, and the heavy lines my control circuits applied thereto.

The telephone system comprises two lines 10 and 11 which for purposes of illustration are shown to include condensers C¹⁰ and C¹¹, bells B¹⁰ and B¹¹, and grounds G¹⁰ and G¹¹, these being part of the standard equipment. These condensers and bells do not form any part of my invention but do not interfere with the operation of the invention, and are desirable so that the person calling the number may hear the line ringing and know that the call has been thus completed for the purposes of this invention.

Line 10 is utilized for closing a circuit through lamp L, and line 11 for opening the circuit. The lamp L is merely illustrative of any electrical element to be remotely controlled by my system, whether it be a single light, a series of lights, a motor, a resistance heating element, a relay switch, or any other electrical element.

Assuming that the subscriber's "on" number is called, allowing the ringing signal to sound one or more times, current is thereby applied through line 10 and a circuit comprising wire 12, condenser 13, wire 14, relay 15, and wires 16 and 17 to ground 18.

The energizing of relay 15 causes its armature 19 to make contact with the normally open terminal 20 of wire 21. This establishes a circuit from a supply wire 22, through wire 23, an armature 24, wires 25 and 26, armature 19, terminal contact 20, wires 21 and 27, through a stick relay 28, thence through wires 29 and 30 to source.

The power for the circuit represented by wires 22 and 30 may be derived from the telephone system or from an independent source.

This energizing of relay 28 causes its armature 32 to close against a contact 33 of wire 36, establishing a modified circuit through wire 27, relay 28, wires 29 and 30 to source, whereupon the relay 28 remains energized after the telephone circuit 10 is broken by the person making the call. It is only necessary for the circuit 10 to remain closed long enough for the relay 28 to become energized through the steps described, whereupon the modified circuit through relay 28 becomes self-sustaining, and the armature 19 associated with relay 15 may return to its normally open position without affecting the modified circuit of relay 28.

When the armature 32 is closed, an insulated contact 40 on the armature bridges terminal

contacts 41 and 42, and closes an output circuit through wires 43, 44, lamp L, and wire 45, derived from supply wires 22 and 30. This lights the lamp L or supplies current to whatever other element is to be operated.

The output circuit remains closed until the "opening" telephone circuit 11 is operated by calling the corresponding number. Thereupon, current through wire 50, condenser 51, and wire 52 energizes relay 53, passing through wires 54 and 17 to ground 18.

When the relay 53 is energized, its armature 24 opens the line between wires 23 and 25, thereby destroying the circuit through holding relay 28, and the lamp circuit is broken.

Although I have herein shown and described my invention in what I have conceived to be the most practical and preferred embodiment, it is recognized that departures may be made therefrom within the scope of my invention, which is not to be limited to the details disclosed herein but is to be accorded the full scope of the claims so as to embrace any and all equivalent apparatus or devices.

Thus, while my invention has been described in connection with telephone circuits, which provide the greatest network of available installations, other means of selectively energizing the solenoids 15 and 53 may be employed for remotely operating my control device.

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

1. In a system of the character described, a circuit control system for use with a telephone line equipped for divided ringing comprising: an electro-magnetic stick relay, a supply circuit adapted to be closed by the energizing of said relay, means responsive to application of ringing current on one side of said line to energize said relay, and means responsive to application of ringing current on the opposite side of said line to de-energize said relay and thereby open said supply circuit.

2. A remotely controllable means for establishing and opening an electrical circuit having a

supply source comprising: a holding stick relay in the supply source circuit adapted when momentarily energized to close its own circuit for holding and to close a separate output circuit to a consuming element, a second relay circuit remotely controllable for momentarily energizing said holding relay, and a third relay circuit remotely controllable for opening said holding relay circuit, said second and third relay circuits each including an electrical signal means operable upon closing the associated relay circuit and means making the operation of said signal means known to persons at the remote places who control said second and third relay circuits.

3. In combination with a telephone subscriber's divided ringing line, a first relay circuit closed by ringing current applied on one side of said line, a second relay circuit closed by the energizing of said first relay and remaining closed after said first relay circuit is broken, an output circuit closed by the energizing of said second relay and remaining closed so long as said second relay circuit remains closed, and a third relay circuit closed by ringing current applied on the opposite side of said line, said second relay circuit and consequently said output circuit being broken by the energizing of said third relay.

4. In combination with a telephone subscriber's divided ringing line, a first electro-magnetic relay having a circuit opening and closing device, a second electro-magnetic relay having circuit opening and closing devices, a third electro-magnetic relay having a circuit opening and closing device, said first relay being energized by ringing current applied to one side of said line and said third relay being energized by ringing current applied to the opposite side of said line, and circuits closed by the energizing of said third relay to open said second relay circuit, and an output circuit closed by the energizing of said second relay and opened by the de-energizing thereof.

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