

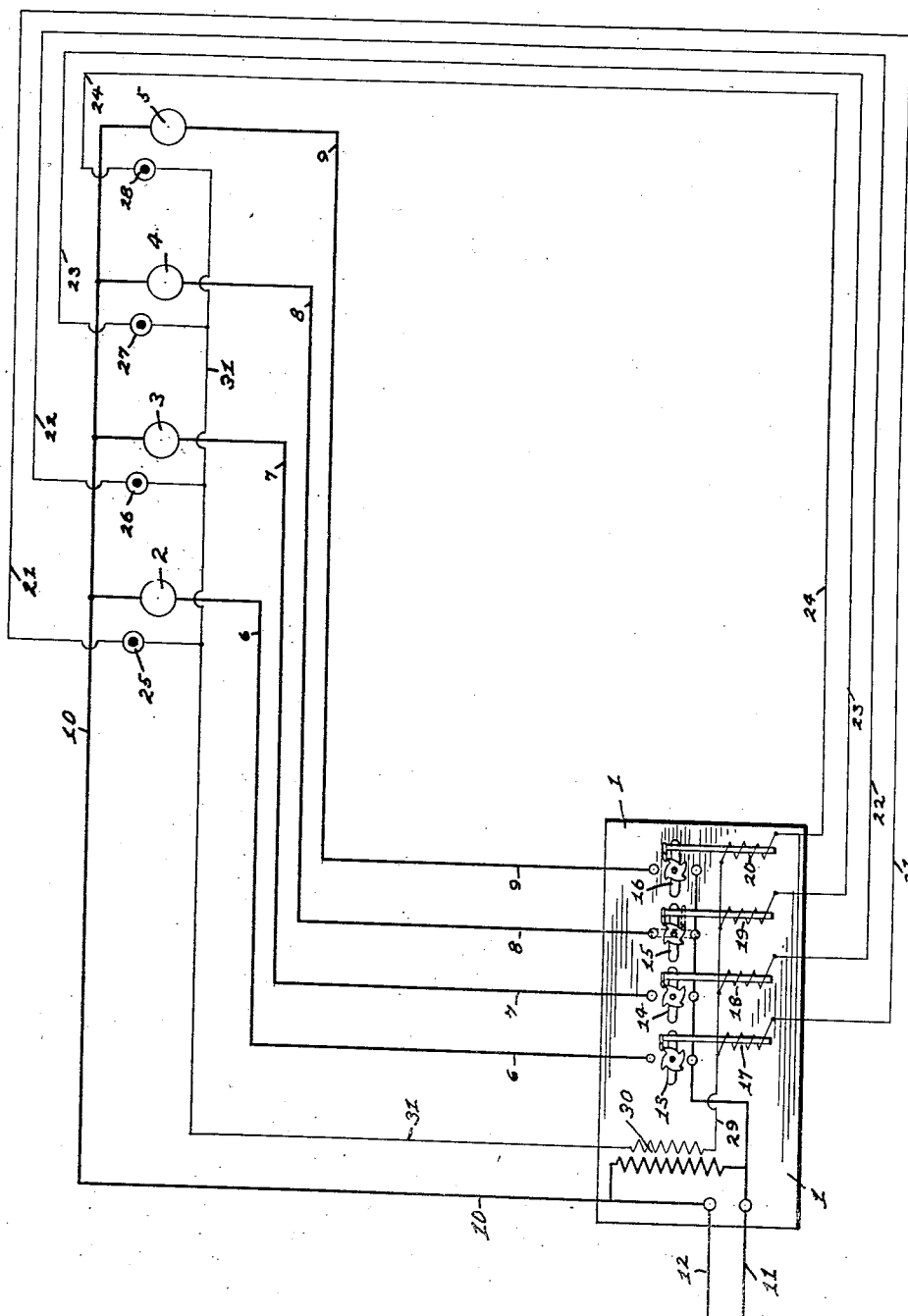
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ELECTRIC HOUSE OR LIGHTING CIRCUIT

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ELECTRIC HOUSE OR LIGHTING CIRCUIT.

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To all whom it may concern:

Be it known that I, HENRY F. VICKERY, a subject of the King of Great Britain, residing at Wellington, New Zealand, have invented a new and useful Improvement in an Electric House or Lighting Circuit, of which the following is a specification.

My invention relates to improvements in electric wiring circuits for the wiring of buildings and the like to conduct an electric current from an outside source of energy to electrical elements such as lighting, heating, and power units within a building.

In ordinary practice such electrical elements are commonly controlled by switches located at convenient points apart of the electrical element and connected directly into the circuit conducting electrical energy thereto. This arrangement necessitates the installation of wires carrying the full line voltage within the walls or other portions of the building between the point at which the current is delivered to each element and the switch. Such wires must of course be thoroughly insulated, the installation of conduits, and insulating material of various descriptions and for various purposes entailing a considerable expense and expenditure of time and labor. Furthermore the installation of such wires normally carrying the full line voltage, even when every precaution is taken to secure complete and efficient insulation, involves a constant danger due to the possibility of defects in the insulating material and wiring and in the connecting elements and switches, this danger being present both with respect to the wiring direct to the electrical element and to the switch wherein the full line voltage is present. Thus the breaking down of the insulation covering the connections to various electrical elements frequently results in disastrous fires due to the shorting of the circuit through a conductor as when a light cord is suspended over a nail driven into a wall and in numerous other instances of carelessness, the risk due to carelessness being added to the unavoidable risk of defective material and workmanship.

It is therefore the primary object of my present invention to provide an improved wiring circuit designed to overcome to a large extent the objectional features of the ordinary wiring circuit, other objects being to reduce the number of connections carrying at any time the full line voltage, and to

exclude current from all primary connections at all times except when the element supplied through any particular connection is in use, to reduce the amount of high tension wiring and consequently the amount of heavy insulation required, to simplify and to reduce the labor involved in the installation of the circuit, to obtain increased convenience in operation and to facilitate repair or alteration, and to reduce risk of fire or personal injury.

I accomplish these and other objects by means of the device disclosed in the drawings forming a part of the present specification wherein like characters of reference are used to designate similar parts throughout said specification and drawings and in which,

The figure represents a conventional wiring diagram of my improved circuit.

Referring to the drawings the numeral 1 is used to designate in general a switch board of any suitable size and construction located at any point selected for convenience to the points at which current is to be delivered within a building and to the point at which the current is brought into the building. The numerals 2, 3, 4, and 5 represent a plurality of electrical elements such as lighting, heating, or power units of any description to which current is delivered from the switch board 1 through connections 6, 7, 8, and 9 respectively and which are connected to a common return connection 10. Connections 11 and 12 from an outside source of electrical energy, not shown, are carried in any suitable manner to the switchboard, one of said connections being connected with the common return 10 and the other connected with the supply connections 6, 7, 8, and 9, thru control switches 13, 14, 15, and 16 respectively. While the control switches are open the supply of electric current will be interrupted at the switch board no current carried by the connections to the elements 2, 3, 4, and 5 while such elements are not in use. The circuit through the electrical elements 2, 3, 4, and 5 will hereinafter be termed the primary circuit.

Electro-magnetic switch operating elements 17, 18, 19, and 20 are mounted upon the switchboard 1 adjacent the control switches, said switch operating elements being connected into a secondary circuit of relatively low potential and having no metallic connection with the primary circuit to the

electrical elements may be of any desired construction adapted to actuate the switches 13, 14, 15, and 16 in response to the flow of current through the secondary circuit as hereinafter more fully described.

The secondary circuit consists of a plurality of connections 21, 22, 23, and 24 connected between manually operated switch buttons 25, 26, 27, and 28 located in convenient positions in association with the several elements 2, 3, 4, and 5 connected with one terminal of the corresponding switch actuating elements 17, 18, 19, and 20 respectively. A conductor 29 is connected between the opposite terminals of the elements 17, 18, 19, and 20 and a secondary current supply 30 which is in turn connected to the switch buttons 25, 26, 27, and 28 through a common return connection 31. The secondary current supply is preferably a step down transformer adapted to reduce the current supplied from the external source to a current of low potential such as commonly provided for bell or buzzer circuits, although of course an entirely independent source of energy such as a battery may be substituted if desired. A transformer of the type commonly inserted in lighting circuits and connected to operate bells and buzzers is recommended but as the form and construction of this element forms no part of the present invention no detailed description of such element is herein necessary. In this connection it is to be noted that in stepping down the current from the external source, no metallic connection is made between the primary and secondary circuits I have described so that at no time will the voltage carried by the secondary circuit exceed a predetermined amount.

From the above description it will be noted that the only primary connections which are at all times energized are the main supply connections leading from the external source to the switchboard, the remaining connections of the primary circuit being energized only when the particular electrical element is being used. Thus no possible electrical leakage or shortage can occur while the circuit is not in use.

The secondary circuit carries a low voltage current such as may be carried with safety by the ordinary bell wire without the extensive insulation and precaution required for the high voltage connections. The wires constituting the secondary circuit may thus be installed without the use of conduit or other heavy insulating materials, and may readily be extended to desired points throughout the building with a minimum of labor and expense.

The manually operated switch buttons 25, 26, 27, and 28 may be of any desired construction, the ordinary bell push button being well suited to this purpose. The second-

ary circuits to each switch operating element is normally broken at the switch buttons so that electro-magnetic elements are energized only when the switch button is manually closed. Thus when it is desired to deliver current to any particular electrical element 2, 3, 4 or 5, the corresponding switch button is operated to energize its electro-magnetic switch operating element and thereby close the primary circuit control switch 13, 14, 15, or 16 to such element. When it is desired to shut off the primary current the switch button is again operated, thereby causing the control switch to be again operated and the primary current supply shut off. It is thus seen that a single switch button of extremely simple construction is made to replace the more complicated and expensive switches ordinarily used wherein different buttons are provided for completing and breaking the circuit therethrough. This arrangement is particularly advantageous in installations where a single electrical element is to be controlled by a plurality of switches located at different points, the stringing of the light bell wire to the several switch points being accomplished with a greatly reduced amount of time and in labor and at a much lower cost than in the present system wherein wires carrying the full line voltage must be installed and thoroughly insulated.

From the above description it will be seen that I have provided an improved wiring circuit wherein the initial cost of installation may be materially reduced and a much greater degree of safety insured both with respect to fire and personal injury when the circuit is placed in operation. The usual fuses and other safety devices are of course installed in connection with the primary circuit but as such elements form no part of the present invention no disclosure has been made in regard thereto. The actual arrangement of the circuit will of course be designed with respect to the requirements of each installation, and various modifications made in the circuit as herein disclosed to provide for various numbers of electrical elements, switches, and the like in both primary and secondary circuits.

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

1. An electric wiring circuit comprising a primary circuit of relatively high potential including a common return lead directly connected with a plurality of electrical elements; a plurality of control switches mounted upon a common switch board relatively remote from the electrical elements; a common supply lead connected through the switches with the electrical elements; electro-magnetic operating means mounted upon the switch board in association with

each control switch for independently operating the same to connect and disconnect their respective elements from the source of energy; a secondary circuit of relatively low potential connected to the electro-magnetic switch operating elements and having no metallic connection with the primary circuit; and manually operated switches associated with each electrical element and connected through the secondary circuit to the corresponding switch operating means for energizing the same to actuate their respective control switches.

2. An electric wiring circuit comprising a primary circuit including a common return lead directly connected between a source of electrical energy of relatively high potential and a plurality of independent electrical elements; a like plurality of control switches mounted upon a common switch board relatively remote from the electrical elements; a common supply lead connected between the source of energy and the electrical elements through the control switches whereby current is normally excluded from the connections to said elements; a secondary circuit of relatively low potential induced from the primary circuit and having no metallic connection with the primary circuit; electro-magnetic switch controlling elements mounted adjacent each control switch and connected into the secondary circuit; and manually operated switches associated with each electrical element and connected through the secondary circuit to the electro-magnetic switch actuating elements whereby the same may be energized to independently actuate the cor-

responding control switches and thereby connect the primary circuit to a desired electrical element.

3. An electric wiring circuit comprising a primary circuit of relatively high potential including a common return lead directly connected between a source of electrical energy and a plurality of electrical elements; a plurality of control switches mounted upon a common switch board relatively remote from the electrical elements; a common supply lead connected between the source of energy and the electrical elements through the control switches whereby current is normally excluded from the connections to said elements; a secondary control circuit; of relatively low potential having no metallic connection with the primary circuit; controlling the supply of current through the primary circuit to each electrical element; electro-magnetic switch operating means mounted in association with each control switch and connected into the secondary circuit to be energized thereby; manually operated switches associated with each electrical element and connected through the secondary circuit to the corresponding switch operating means for causing the same to be energized to operate the primary control switch; and a transformer connected between the primary and secondary circuit to obtain a secondary current of desired potential within said secondary circuit.

In witness whereof I hereunto set my signature.

HENRY F. VICKERY.