

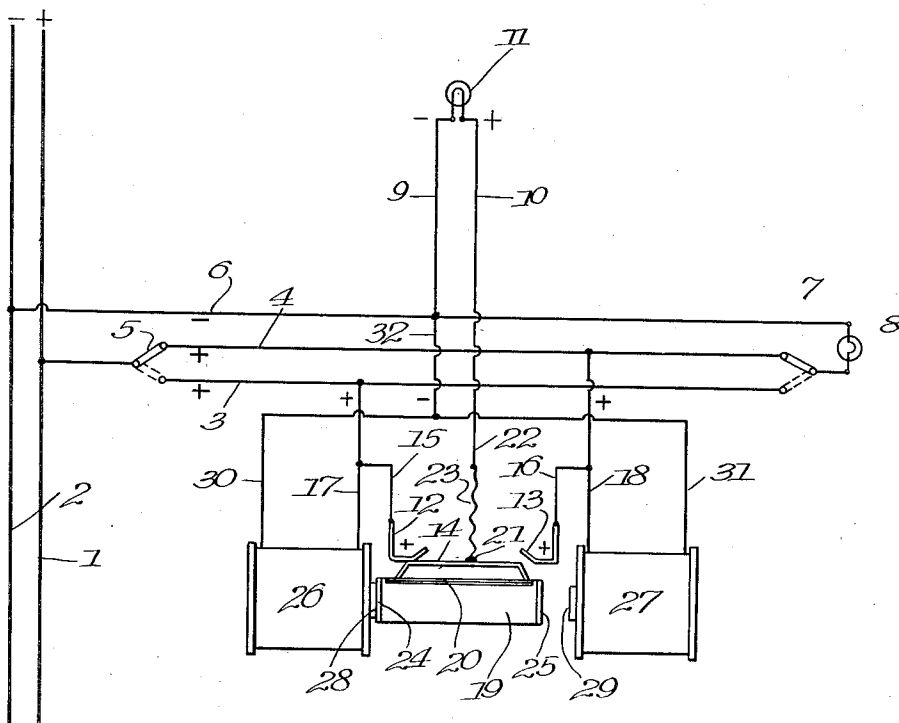
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AUTOMATIC SWITCH

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AUTOMATIC SWITCH

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4 Claims. (Cl. 171-97)

The present invention relates to a device applicable to a typical three wire lazy man's circuit, whereby current may be drawn from the circuit without interruption.

5 More precisely, the invention comprises a magnetic relay applicable to a typical three wire lazy man's circuit operable on either closed position of the double throw switch thereof to maintain a constant and uninterrupted current in a secondary two wire circuit connected across the three wire circuit.

The device is simple in construction and operation, and may be readily applied to the existing three wire circuit without alteration thereof, no additional wires from the primary source of power being necessary.

15 The construction and details of the invention will now be described with reference to the accompanying figure, wherein a diagrammatic plan view of the device is shown.

In the figure a typical lazy man's three wire circuit is shown connected to the positive and negative wires 1 and 2 of the main line from the primary source of power. The three wire lazy man's circuit comprises briefly two positive wires 3 and 4, connected to the positive wire 1 of the main line by way of a two-way switch 5, and a negative wire 6 connected directly to the negative wire 2 of the main line. The circuit is completed through a two-way switch 7, whereby the wires 3 and 4 may be selectively connected to one side of the load or electrically operable member 8 which may comprise a group of lamps in series or parallel, the other side of the load being connected to the negative wire 6.

It may be desirable, in many instances, to cut in a secondary circuit on the three wire circuit just described intermediate the ends of the same to obtain current for operating some electrical household device, such as a vacuum cleaner, coffee pot or electric fan. It is apparent from the wiring of the three wire circuit that when one of the positive wires is connected by way of the switch 5 to the source of power, the other is necessarily disconnected therefrom, depending upon which way the switch 5 is thrown. In order, therefore, to maintain an uninterrupted current in the secondary circuit, such as is designated by the wires 9 and 10, the terminals of which are connected to a wall socket or directly to the terminal of a load 11, it is necessary to have some automatic means for selectively connecting the positive wire 9 to the energized wire of the positive wires 3 and 4. That is, it is desirable to have 55 current flow into the wall socket or through the

load 11 irrespective of the position of the switch 5, and in order to maintain a constant current the wire 10 must at all times be connected to the energized wire of the two positive wires 3 and 4.

The device hereinafter described is adapted to be readily applied to a three wire circuit, such as was described heretofore. It comprises a pair of contacts 12 and 13 arranged to be slidably engaged by a bridge-shaped slide 14, the distance between the contacts being slightly greater than the length of the slide 14, so that in its movement the slide will at no time be in engagement with more than one of the contacts. Contact 12 is wired to the positive wire 3 by way of the wires 15 and 17, while contact 13 is wired to the positive wire 4 by way of the wires 16 and 18.

The bridge-shaped slide 14 is attached to the surface of a tubular member 19 and extends longitudinally thereof, the slide being electrically insulated from the tube by a non-conductive piece of material 20 extending beneath the legs of the slide. A terminal 21 is secured to the middle of the slide 14 to which is attached a wire 22 having a flexible portion 23 adjacent the terminal 21 so as to permit the tube to move the bridge from one contact to the other. The wire 22 is connected to the wire 10 and constitutes the means whereby current is supplied to the wire 10.

The tube 19, at least the ends 24 and 25 of which are formed of magnetically attractive material, is arranged for movement between the ends of a pair of axially aligned coils 26 and 27 provided with magnetizable cores 28 and 29. The coils 26 and 27 are connected at one end by the wires 30 and 31, respectively, to the negative wire 6 by way of a wire 32 which may or may not be an extension of the wire 9. The opposite ends of the coils are connected by wires 17 and 18 to the positive wires 3 and 4, respectively.

The device operates as follows: Let it be supposed that a load has been placed across the wires 9 and 10, and that the switches 5 and 7 occupy the full line positions shown so as to complete a circuit from the positive wire 1 through switch 5, wire 4, switch 7, lamp 8 and wire 6 to the negative wire 2. The wire 4 being energized, current will also pass through the wire 18, thereby energizing the coil 27. The tube 19 in response to the magnetized core 29 of the coil 27 will move toward the coil 27, and thereby cause engagement of the contact 13 and the slide 14, whereby a current is established from wire 4 through wires 18 and 16, contact 13 and wire 22 to the positive wire 10, thus completing 55

the circuit necessary to operate the device 11. Suppose now that the current has been established, someone turns the lamp 8 off by throwing the switch 5 to the dotted line position, thereby cutting the current off in wire 4, but at the same time establishing a current in the wire 3. If there were no such automatic means as described above, the device 11 would immediately cease to operate and it would be necessary to transfer the wire 10 from its connection with the dead wire 4 to the energized wire 3 in order to continue operation. This device, however, accomplishes the transfer automatically. As soon as the current is established in wire 3, the coil 26 is energized thereby and the core 28 attracts the tube 19 toward the coil so as to establish a current from the wire 3 through the wires 17, 15, contact 12, and wire 22 to the positive wire 10. It is clear from the foregoing description of the operation of the device that the load 11 will be supplied with a constant source of current irrespective of the position of the switch 5.

The invention as described and illustrated in the drawing is not necessarily limited to the particular arrangement herein shown, but may take any form within the scope of the appended claims.

I claim:

1. In an electrical distribution system of the class described, the combination with a main supply, a branch circuit connected to the main supply, said branch circuit including a three wire circuit having one of the wires connected to one of the main supply leads, switch means selectively connecting either of the other two wires to the other lead of the main supply, an electrically operable member connected to the first mentioned wire, switch means for controlling the connection of the branch circuit to the operable member, a second operable member, a secondary circuit connecting the second operable member to the branch supply, means for maintaining the electric connection of the secondary circuit with the branch supply circuit when the current to the operable member is cut off, said means including a movable magnetically operable member connected to the branch circuit when the circuit to the operable member is closed, and means for automatically moving said magnetically operable member to establish a circuit connection of the secondary circuit with the branch circuit when the circuit to the operable member is rendered inoperative.

2. In an electrical distribution system of the class described, the combination with a main supply, a branch circuit connected to the main supply, said branch circuit including a three wire circuit having one of the wires connected to one of the main supply leads, switch means selectively connecting either of the other two wires to the other lead of the main supply, an electrically operable member connected to the first mentioned wire, switch means for controlling the connection of the branch circuit to the operable member, a second operable member, a secondary circuit connecting the second operable member to the branch circuit, means for maintaining the electric connection of the secondary circuit with the branch circuit when the current

to the operable member is cut off, said means including a pair of spaced fixed contacts individually connected to the branch circuit, a movable contact arranged alternately to engage one of the spaced contacts for establishing a circuit of the branch circuit with the secondary circuit, and means for bringing the movable contact into engagement with one of the fixed contacts, whereby when the operable member is cut off from the branch circuit, automatically to establish a circuit connection of the second operable member with the branch circuit.

3. In an electrical distribution system of the class described, the combination with a main supply having a positive lead and a negative lead, a branch circuit including a three-wire circuit having one of the wires connected to the negative lead, a double switch for selectively connecting the other two wires to the positive lead, an electrically operable member connected to the negative lead of the branch circuit, switch means for controlling the connection of the branch circuit to the operable member, a second operable member, a secondary circuit connecting the second operable member to the branch circuit, a pair of spaced fixed contacts individually connected to one of the positive leads of circuit, a movable contact arranged selectively to engage one of the fixed contacts, magnetic means for actuating the movable contact to move the same in engagement with one of the fixed contacts when the branch circuit is connected to the operable member, a second magnetic means connected to the other fixed contact and to the branch circuit, said second magnetic means arranged to be energized to bring the movable contact in engagement with the other of the fixed contacts when the operable member is disconnected from the branch supply so as automatically to establish an electrical connection between the second operable member and the branch circuit.

4. In an electrical distribution system of the class described, the combination with the main supply having a positive lead and a negative lead, a branch supply including a three-wire circuit having one of the wires connected to the negative lead, a double switch selectively connecting the other two wires to the positive lead, an electrically operable member connected to the negative lead of the branch circuit, switch means for controlling the connection of the branch circuit to the operable member, a second operable member, a secondary circuit connecting the second operable member to the branch supply between the main supply and the operable member, a pair of spaced fixed contacts, a movable contact arranged selectively to engage one of the fixed contacts, magnetic means associated with each of the fixed contacts, means for connecting the magnetic means to the branch circuit for energizing the same, and means when the supply to the operable member is cut off for automatically actuating one of the magnetic means to bring the movable contact in engagement with its associated fixed contact so as automatically to establish a circuit through the secondary circuit with the second operable member.

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