

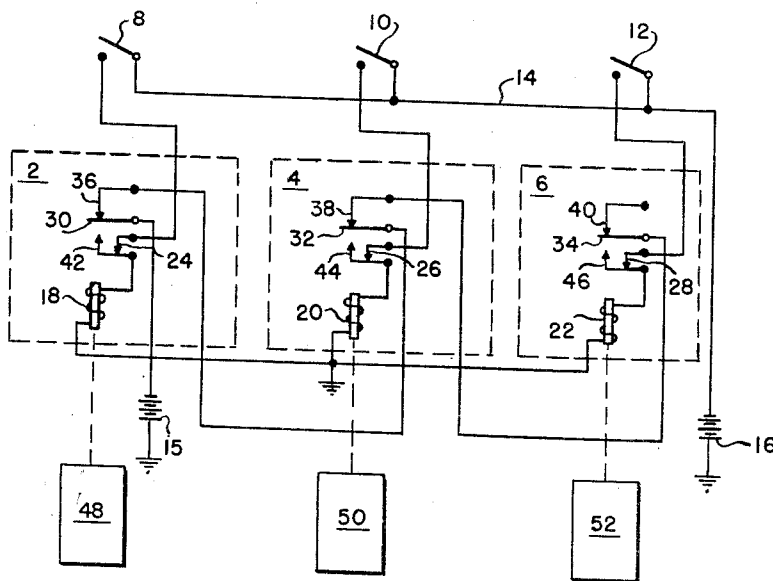
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RELAY SELECTING CIRCUIT

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RELAY SELECTING CIRCUIT

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1 Claim. (Cl. 317—137)

This invention relates to relay systems and more particularly to relay systems for controlling a multiplicity of circuits in accordance with a predetermined priority schedule.

The object of this invention is to provide means by which a multiplicity of circuits can be assigned a priority with respect to one another, so that when and if two or more of said circuits are sought to be operated by external means, either simultaneously or alternately, that associated circuit having the highest assigned priority will always be selected and operated.

A further object of this invention is to provide a priority selective relay system for controlling a multiplicity of electrically dissociated circuits capable of operation in a power level completely different from that of the relay system.

These and other objects of the invention will appear in the following description and appended claim, reference being had to the accompanying drawing in which a preferred embodiment of this invention is shown.

In the drawing, a three relay system is shown, but it will be apparent from the following description that additional relays may be added to the system to control any number of circuits by merely repeating the circuit shown as often as is necessary, and that any other type of magnetically actuated control device may be utilized in the same manner and to perform the same functions as the relays here described. In this application the term "lock-in power source" is used to connote the power source required to maintain the relays in the energized state once the associated operating coils of the relays are energized.

In the drawing, relays 2, 4 and 6 are arranged in order of descending priority from left to right and are placed directly below their associated switches 8, 10 and 12, respectively. Switches 8, 10 and 12 each have one of their sides connected to a common wire 14, which is connected to power source 16. The other sides of each of said switches 8, 10 and 12 are respectively connected to operating coils 18, 20 and 22, through normally closed arms 24, 26 and 28, respectively. Arm 30 is connected to power source 15. Arm 32 is connected to power source 15, through arms 36 and 30. Arm 34 is connected to power source 15 through arms 38, 32, 36 and 30. Arm 40 is shown merely to indicate the possibility of adding more relays to the system shown and does not function as part of the three relay system of the drawing.

Each relay in the system operates on the same contact sequence when its coil is energized; therefore, only the contact sequence of relay 2 will be explained. When coil 18 of relay 2 is energized, first the normal contact of arms 36 and 30 is broken, then contact is made between arm 30 and arm 42, and lastly, the normal contact of arms 24 and 42 is broken.

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At this point it should be noted that switches 8, 10 and 12 provide initiating energy to coils 18, 20 and 22, respectively, but that in each case, the initiating energy is supplied through normally closed contacts. Therefore, the relays must obtain lock-in energy through some other circuit or they will oscillate. Lock-in energy is supplied by power source 15 to coil 18 through arms 30 and 42, to coil 20 through arms 30, 36, 32 and 44 and to coil 22 through arms 30, 36, 32, 38, 34 and 46. Thus, relay 2 provides its own complete lock-in circuit once it is initially energized, relay 4 uses normally closed contacts of relay 2 in its lock-in circuit and relay 6 uses normally closed contacts in both relay 2 and relay 4 to complete its lock-in circuit. Thus, the relays are effectively connected in a series lock-in chain so that if more than one relay is energized, either simultaneously or alternately, only the relay closest to power source 15 in the relay chain will lock-in and, in so doing, will prevent the locking-in of all other relays more remote from power source 15 in the chain.

The external circuits operated by the relay system according to this invention and the relay contacts within those circuits that control external circuit operation are indicated by boxes 48, 50 and 52 and are shown directly below their associated relays. It is understood that the circuits indicated by boxes 48, 50 and 52 are operated by relays 2, 4 and 6, respectively.

Switches 8, 10 and 12 are shown as knife switches for simplicity and for ease of explanation, but it is understood that they may be any type of switch, including the contact arms of another relay system.

In the operation of a system according to this invention some external means (not shown), such as a relay system or manual operation is utilized to close one or more of switches 8, 10 and 12, either simultaneously or alternately. As soon as any one or all of said switches close, they provide paths for energizing the coils of their associated relays. Once the coils of the associated relays are energized, the associated relays begin to operate on the previously described contact sequence. Then, since each relay except relay 2 is dependent on a relay less remote from power source 15 than itself, the relay closest to power source 15, in the previously described lock-in chain, will lock itself in and all other relays more remote from power source 15 will return to their normal position.

It will be noted that relays more remote from power source 15 in the lock-in chain than the one relay which locks itself in, will oscillate as long as their associated switches remain closed. To prevent those oscillations from affecting the circuits indicated in boxes 48, 50 and 52, the operated relay arms in circuits 48, 50 and 52 may either be mechanically interlocked or electrically interlocked to their associated coil circuits to prevent their operation until their associated coil locks itself in.

As many apparently widely different embodiments of this invention may be made without departing from the spirit and scope hereof, it is to be understood that the invention is not limited to its specific embodiments except as defined in the appended claim.

What is claimed is:

In a relay selecting circuit the combination comprising a lock-in power source, a plurality of discrete relays, each of said relays having at least a first and a second pair of normally closed contact arms, the discrete coils in each of said relays being in circuit with the first pair of said closed contact arms in each of said relays when said coils are unenergized, the second pair of said closed contact

arms in the first of said relays being in circuit with said lock-in power source, the second pair of closed contact arms of the second of said relays being connected to said second pair of contact arms of said first relay, the second pair of closed contact arms of each succeeding relay of said plurality of relays being connected to the second pair of closed contacts of each preceding relay, an initiating power source, and a plurality of discrete switches connecting each of said relays to said initiating power source.

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References Cited in the file of this patent

UNITED STATES PATENTS

1,878,334	Seeger -----	Sept. 20, 1932
2,000,724	Taughner -----	May 7, 1935
2,276,607	Bruno -----	Mar. 17, 1942
2,593,578	Liberg -----	Apr. 22, 1952