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SELECTOR SWITCH

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This invention relates to electric control systems, and more particularly to selector switches for controlling multiple electric circuits in such systems. The invention is advantageously adapted to the control of lighting circuits in theatres, television studios, auditoriums, and other places where complex lighting or comparable circuits are employed.

Especially in lighting systems it is often desired to provide several light circuits grouped through the same feeder source and control means so that they may be controlled as a unit. It is also desirable to be able to select any one of a number of control means and connect a particular light circuit to it.

The application of ordinary multi-contact switches in this specialized field has evidenced numerous disadvantages. Among these disadvantages are the arcing when the switch is opened or moved from one contact to another; resulting in poor connections and short life from burning, disturbance of intermediate circuits while moving the switch through intermediate contact points, overloading a feeder circuit temporarily and blowing its fuse or circuit breaker when additional load is connected to the corresponding contact point momentarily in selecting a new switch position, inability to preset light circuits without an identical duplicate set of switches, and the vast multiplicity of switches of ordinary type required to yield the desired flexibility of control.

The present invention overcomes these disadvantages by a novel selective switching device and control system which eliminates arcing and burning of the contacts, permits light or other load circuits to be preset while the switch contacts are automatically de-energized, and affords superior flexibility, speed and facility of control. For example, the invention permits any selection of light circuits to form a group comprising a load suitable for a feeder circuit which includes a dimmer of certain wattage. Thus, the number of feeder circuits required to operate a given number of light circuits properly may be considerably reduced, with resultant economy and simplicity in installation and operation. These, as well as other advantages, will be evident from the following description of a preferred embodiment of the invention, as illustrated by the accompanying drawings, in which:

Fig. 1 is a front or elevational view of a selector switch in accordance with the invention;

Fig. 2 is a cross-sectional view taken along the line 2—2 of Fig. 1;

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Fig. 3 is a top or plan view of the switch of Fig. 1;

Fig. 4 illustrates a control board of a type useful in theatres, and the like, which includes several selector switches and other controls in accordance with the invention;

Fig. 5 is a circuit diagram illustrating the electrical connection of a single selector switch in a lighting circuit control system such as would include a control board as shown in Fig. 4.

Briefly, the switching device of the invention includes two switches connected in series, the first of these being of the selective type and the second being of the circuit breaker type, the first being so constructed that it can be closed only at contact positions, and when it is closed at a given position its contacts are positively locked in contact at that position, both switches being so constructed and interrelated that the first cannot move from one contact position to another without first automatically opening the second switch. The selector switch is adapted to connect to a load circuit such as a light circuit, for example, any one of a number of feeder circuits which may in themselves include any desired equipment such as dimmers, or other circuit-modifying apparatus. For this purpose, the selector switch is arranged to make contact selectively with any one of a plurality of contacts, each connected to a feeder circuit. The second switch may be manually opened and closed, but only when the contacts of the first are positively locked together. The invention will be better understood from the following detailed description.

Referring to Figs. 1, 2 and 3, the selector switch in accordance with the invention comprises a face plate or front panel 14, preferably of metal, and a rear panel 15, preferably of insulating material. Through these panels, which are rigidly secured together and spaced apart, passes a metal shaft preferably of two sections 16, 17, separated by an insulating portion. This separation is effected by drilling two holes on the same axis from opposite sides of a block 18 of insulating material, leaving an insulating portion 19 to separate the shaft sections, thus making the front section of the shaft electrically "dead." Both shaft sections, in effect forming a single shaft, are journalled in the panels so as to be rotatable, and movable axially therein at all positions of rotation.

Secured to the insulating rear panel 15 are a plurality of fixed contacts 20 arranged in a circle. These are connectible to the various branch or