June 10, 1930. R. J. WENSLEY 1,763,113

THEATER LIGHT CONTROL APPARATUS

Filed March 26, 1929

Fig. 1.

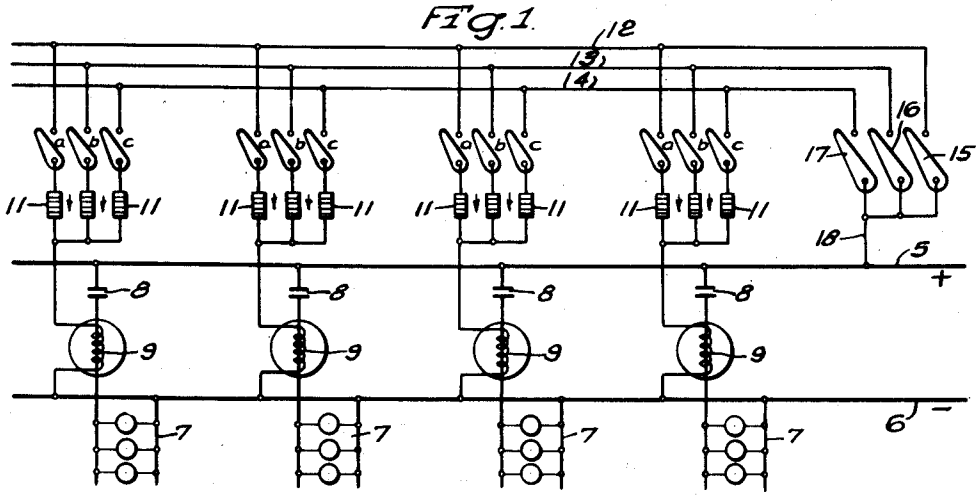


Fig. 2.

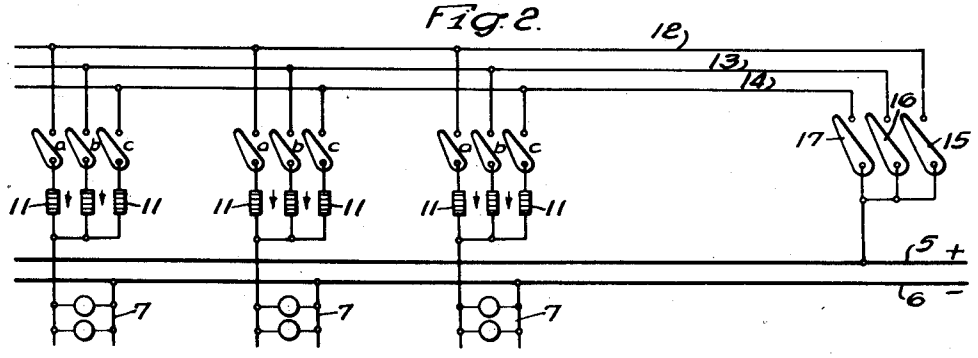
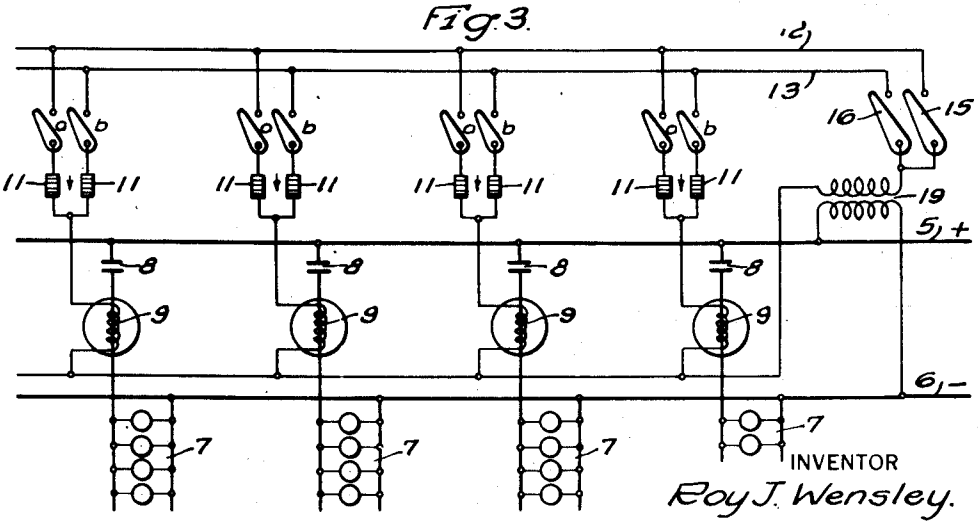


Fig. 3.



INVENTOR
Roy J. Wensley.
BY
Shirley Lubar
ATTORNEY

Patented June 10, 1930 1,763,113

UNITED STATES PATENT OFFICE

ROY J. WENSLEY, OF EDGEWOOD, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA

THEATER-LIGHT CONTROL APPARATUS

Application filed March 26, 1929. Serial No. 350,104.

My invention relates to theater-light control apparatus and particularly to control apparatus that may be preset to energize selected lighting circuits in a predetermined manner during any one of a plurality of scenes.

Heretofore, in multi-scene presettable switch-board apparatus, it has been customary to employ a contactor switch for each lighting circuit having two or more coils for operating the contactor, the control windings thereof being individually connected to different control conductors that are controlled by separately operable master switches, the individual coils being controlled by presettabl switches, one for each coil. Because of the bulk of the usual control winding for a switch and because of space limitations, it has been impractical to use a multi-coil contactor except with switch-boards such as are commonly known as two-scene preset switchboards.

A separate coil is required for each scene set-up because, if the scene-control conductors were connected to a single coil, sneak currents would pass from one scene-control conductor to another, should more than one of the preset switches associated with the contactor coil be closed, thereby causing all of the closed lighting circuits to be energized.

An object of my invention is to provide a single-coil contactor for controlling each lighting circuit and to prevent sneak currents by placing unidirectional valves in the conductors which connect the control winding of the contactor to the several control conductors. By using the valves to prevent sneak currents and only allowing a uni-directional current to pass to the control winding of the contactor switches, direct-current contactor switches may be employed which are more simple in construction and less expensive than the usual alternating-current contactors.

A further object of my invention is to provide a control system for theater lighting having the above-noted characteristics, wherein all of the advantages incident to the use of multi-coil contactors are derived, as well as the additional advantage of a less expensive and more simple apparatus that may be adapted to control a greater number of scene set-ups, for, in this instance, provision may be made for any reasonable number of scene set-ups and the apparatus be contained within the space limitation.

These and other objects that will be made apparent throughout the further description of my invention are attained by means of the apparatus hereinafter described and illustrated in the accompanying drawings, wherein—

Figure 1 is a diagram illustrating a theater-lighting control system that is capable of being preset to obtain different lighting-circuit combinations for three separate scenes.

Fig. 2 is a diagram illustrating a control system embodying features of my invention, wherein the usual current-responsive contactor switch is absent and wherein the current supplied to the various load circuits is controlled by the separate-scene master switches, and

Fig. 3 is a diagram illustrating a theater-lighting control system similar to that illustrated in Fig. 1, except that a transformer is provided for the control circuits connected to an alternating-current feed circuit.

Referring to the drawings and particularly to Fig. 1, I have shown a theater-lighting control system comprising a feed circuit for direct current, a positive feed conductor 5, a negative feed conductor 6 and a plurality of lighting circuits 7 that are connected to the feed conductors 5 and 6 and are controlled through the medium of contactor switches 8 which may be of the direct-current type and which are provided with control windings 9 that are connected, at one terminal, to the positive conductor 6, the other terminal of each contactor of each coil 9 being connected commonly to a plurality of uni-directional valves 11.

A plurality of control conductors 12, 13 and 14, one for each scene, are provided and these control conductors are provided individually with separately-operable scene master switches 15, 16 and 17, respectively, one terminal of each switch being connected, in common, to a conductor 18 that is connected to the feed conductor 5.

The uni-directional valves 11 associated with a particular contactor coil 9 are connected, at one terminal, to separate presettable switches *a*, *b* and *c*, and each presettable switch is connected to a different control conductor, the switches *a*, *b* and *c* being connected to control conductors 12, 13 and 14, respectively.

Each of the presettable switches may be of any preferred form that may be moved to either its open or its closed position and remain in the position to which it is moved, in order to predetermine the energization of the contactor switch with which it is associated. The polarity of the valves 11 is so arranged that current may flow through them from the control conductors 12, 13 and 14 to the contactor coils 9 of the contactor switches 8, but no current that passes through one valve can flow back through the other valve connected thereto. For this reason, no sneak currents can pass from the valve connected to the switch *a* to the control conductors 13 and 14, even though all of the presettable switches *a*, *b* and *c* are closed.

In operation, scene master switches 15, 16 and 17 are normally open and are adapted to control scenes which may be designated as A, B and C, respectively. Any lighting circuits that are to be preselected for scenes A, B and C are preset by closing the presettable switches *a*, *b* and *c*. It will be understood that, when the switch *a*, associated with a lighting circuit, is closed, that particular circuit will be energized when the scene master switch 15 for scene A is closed, and, if it is desired that the same circuit be energized during scene B, the switch *b* of that circuit is closed and so on. When the master switch 15 for scene A is closed, all of the lighting circuits will be energized in which the preset switch *a* is closed, and, when it is desired to energize the circuits preset for scene B, scene master switch 15 is first opened and scene master switch 16 for scene B is closed. All circuits in which presettable switches *b* are closed will then be energized. The same follows for the scene master switch 17 for scene C.

By reason of this arrangement of apparatus, single-coil contactors of the direct-current type may be used, thereby conserving both space and expense, and at the same time, render it possible to provide for a large number of preset scene set-ups by means of apparatus that may be placed within the space limits of the switchboard.

In Fig. 2, I have shown a control system for theater lighting wherein the contactors have been omitted and wherein the valves 11 of each group are connected in common to one of the conductors of the lighting circuit 7. The master scene switches 15, 16 and 17 are of such type that they may be opened under load, the arrangement of the preset switches *a*, *b* and *c*, with respect to the valves 11 and control conductors 12, 13 and 14, are the same as that illustrated in Fig. 1, where alternating current or direct current may be supplied by the feed conductors 5 and 6. The valves 11 are of sufficient capacity to carry the entire load of the load circuit.

The system illustrated in Fig. 3 is similar to that shown in Fig. 1, with the exception that the valves are provided for two circuits instead of three, and a potential transformer 19 serves to supply current to the control conductors 12 and 13 at reduced voltage. Where a transformer is used, alternating current must be supplied to the feed conductors 5 and 6.

It will be seen from the foregoing that I have provided a theater-lighting control system wherein any desired number of scenes may be preset for controlling any desired number of load circuits and wherein a single-coil contactor switch may be employed in each lighting circuit without permitting sneak currents that would interfere with the proper functioning of the apparatus.

While I have illustrated but one embodiment of my invention, it will be apparent to those skilled in the art that various changes, modifications, substitutions, additions and omissions may be made in the apparatus illustrated, without departing from the spirit and scope of my invention, as set forth in the appended claims.

I claim as my invention:

1. A control system for theater lighting comprising a feed circuit, a plurality of load circuits, a current-operated control switch for each load circuit, a plurality of scene-control conductors, a plurality of uni-direction valves for each control switch commonly connected at one terminal to the control switch and individually connected to a different scene-control conductor, and a presettable switch for each valve.

2. A control system for theater lighting comprising a feed circuit, a plurality of load circuits, a current-operated control switch for each load circuit, a plurality of scene-control conductors, a plurality of uni-direction valves for each control switch commonly connected at one terminal to the control switch and individually connected to a different scene-control conductor, a presettable switch for each valve and a master switch for each control conductor.

3. A control system for theater lighting comprising a feed circuit, a plurality of load circuits, a plurality of control conductors, a plurality of uni-directional valves operatively associated with each load circuit and connected individually to a different control conductor, a presettable switch for each valve and a master switch for each control conductor.

4. A control system for theater lighting comprising a feed circuit, a plurality of con-

trol conductors, a plurality of load circuits connected to the feed circuit, a plurality of uni-directional valves for each load circuit connected in common thereto and individually to a different control conductor, a presettable switch for each valve and a master switch for each control conductor.

5. A control system for theater lighting comprising a feed circuit, a plurality of control conductors, a plurality of load circuits connected to one side of the feed circuit, a plurality of uni-directional valves for each load circuit connected in common thereto and individually to a different control conductor, a presettable switch for each valve and a master switch for each control conductor, the master switches being connected in common to the other side of the feed circuit.

In testimony whereof, I have hereunto subscribed my name this 16th day of March, 1929.

ROY J. WENSLEY.