

such cases (see Fig. 7) the universal joint connections 33 are dispensed with and each footlight section is provided with an individual spur gear 31 co-acting with motor driving gears 35. Furthermore, there is provided an individual motor 36 for each footlight section. This construction with independent motors for the different sections provides for selective displacement of the various sections independently of the other sections as will well be understood. It is only necessary to supply the current to the motors individually and in this way selective operation of the sections may be attained.

In certain installations, motor drive may be dispensed with or with motor driven and operated footlights it may be desirable to provide for manual operation of the sections in emergencies. In such cases one of the shaft sections 32 is provided with a worm wheel 38 (see Fig. 6) coacting with a worm gear 39 driven by a vertical shaft 40 having its upper end suitably shaped to receive the socket portion 41 of a brace and bit 42 or other manually operable device. This brace and bit 42 can be introduced through an opening in the stage floor as shown in Figs. 5 and 6.

In disappearing footlights of this class, it is not only objectionable, but there is some fire hazard in permitting the lamps to continue burning when the footlights are in concealed or closed position (see Fig. 1). Accordingly, switching devices are provided which are arranged to close circuits to the lamps when the footlight sections are in open position and which switching devices interrupt current supply to the lamps when the footlights are in closed position.

Provision is made for utilizing the motion of the carriers 10 for bringing about operation of the switching devices. As will be hereinafter explained, there are certain switching devices which are provided for lamp control and other switching devices which are provided for motor control. Both of the switching devices in question are located in switch boxes 43, fixed to the carriers below the lamp boxes. The switching devices themselves may be of any conventional type, but as here shown are of the snap-throw-over toggle type. Fig. 8 shows the type of switch which is used for controlling the lamp circuits and Fig. 9 shows the type of switch which is used for controlling the motor circuits. Each lamp circuit switch is provided with an operating lever generally designated 44 in Fig. 8 and designated 44W, 44R and 44G in Figs. 4, 5 and 7, which levers individually shift the circuit closing members 45. It may be here explained that the various footlight sections contain varied colored lamps marked "Red", "White" and "Green". The levers generally marked 44 and individually marked 44R, 44W and 44G project downwardly from the switch boxes 43 and are in such position that upon the carrier being swung towards open position (Fig. 2) such operating levers will be engaged by a stud 46 carried by the frame 17 and displaced in clockwise direction to close the switch contacts for the lamps. This closure of the contacts occurs just before the carriers reach the fully open position. To cut off current supply to the lamps, another stud 48 is provided (see Fig. 1) which stud is adapted to rock the levers in reverse or counterclockwise direction to open up the contacts and cut off current supply to the lamps when the carriers are in closed position as shown in Fig. 1. The switch contacts for the lamp circuits are generally designated 47 in Fig. 8 and are individually designated 47R, 47W and 47G in the

circuit diagram of Fig. 10. It will be understood that these lamp switch contacts are in open position when the carrier is in the position of Fig. 1 and in closed position when the carrier is in the position of Fig. 2.

Lamp control circuits

Referring to the circuit diagram, 50 designates the supply mains for the current. 51 designates a main line switch having suitable leads extending to the switch points of two groups of individual switches 52 and 53. The switches 52 can be individually opened or closed to turn on or off either the red lamps, the white lamps or the green lamps and switches 53 are provided for shutting off and turning on current supply to the individual footlight sections. From the switches 53, individual supply lines lead to the switch contacts and individual return lines lead back from the lamps to switches 52.

With this arrangement of circuits it is accordingly possible to optionally turn on or off the lights in various sections and to optionally turn off or on lights of different color in the various footlight sections. Also it is possible to turn on all of the lamps in all these sections and selection can be made as to color which is turned on in the various sections.

Motor control circuits

Where motor drive is provided, provision should be made to change the setting of the motor circuits in accordance with the position of the footlight sections. The various controlling conditions which must be taken into consideration may be explained as follows.

First when the footlights are closed, provision should be made to set up motor controlling circuits which upon the closing of a switch at a distant control point will cause the motor or motors to operate to displace the motors towards open position. Then when the footlights and carriers have reached their full open position this opening circuit should be automatically interrupted to terminate the motor operation and stop further displacement of the carriers. At the same time other controlling circuits should be closed so that upon a subsequent further manipulation of the switches at the distant point the carriers will be caused to move under the influence of the motor or motors towards closed position. Then again when the carriers reach their closed position this motor circuit or circuits should again be interrupted and the previously mentioned motor opening circuits set up.

Preferably snap-over toggle switches are used for controlling the motor circuits and insofar as their operation is concerned, such switches are operated in the same way as the lamp switches, i. e. by the cooperation of studs 48 and 46 with the motor switch operating levers 44M. In lieu of having single pairs of contacts such as 47 which are provided for the lamp circuits, each motor switch lever 44M is adapted to displace a circuit closing member 45M alternatively into contact with either of a pair of contacts generally designated 57 and 58 in Fig. 9 and designated 57a, 57b, 57c, 57d and 58a, 58b, 58c and 58d in the circuit diagram, Fig. 10. The upper of the contacts 57a and 58a are joined in common and connect to one end of field of the motor. The other end of the motor field is connected in common to contacts 57b and 58b. One end of the armature circuit is connected to 57c and 58c and the other end of the armature circuit is connect-