A. N. ROGERS & W. F. O'NEILL.

DEAD FACE SWITCHBOARD.

APPLICATION FILED APR. 17, 1914.

1,297,912.

Patented Mar. 18, 1919.

FIG. 3.

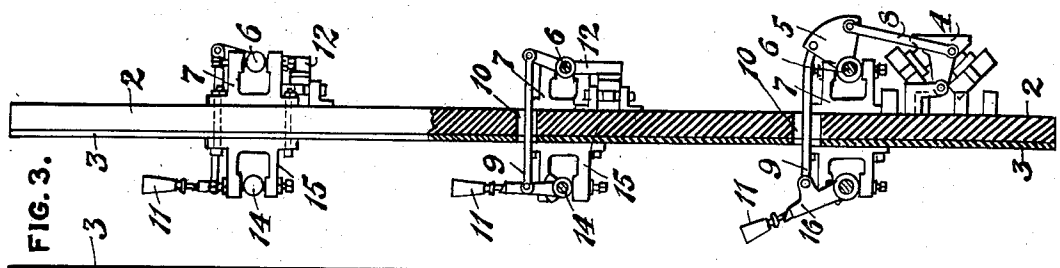


FIG. 1.

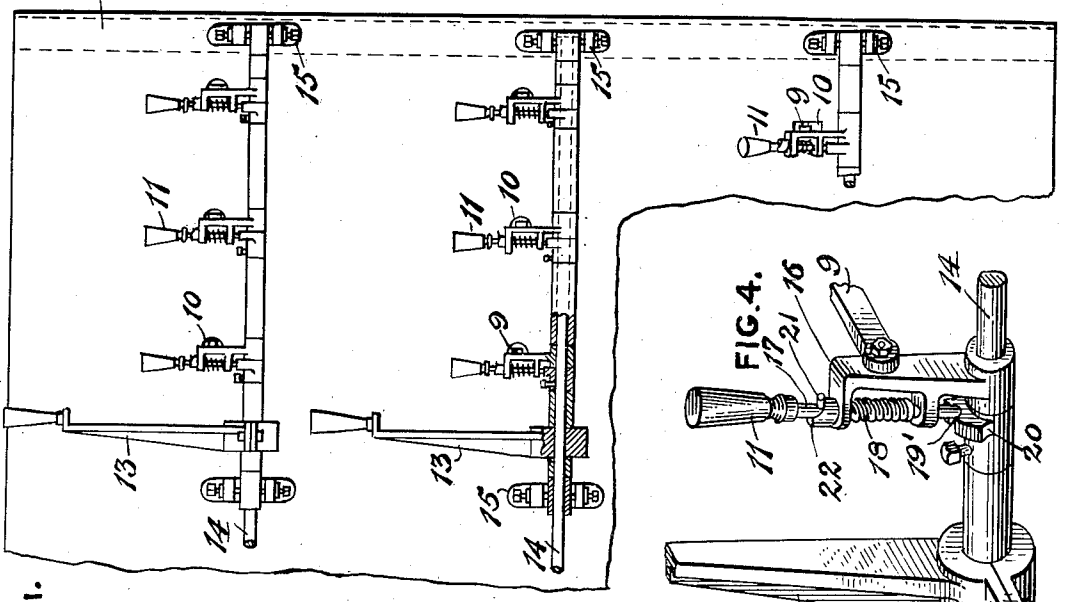
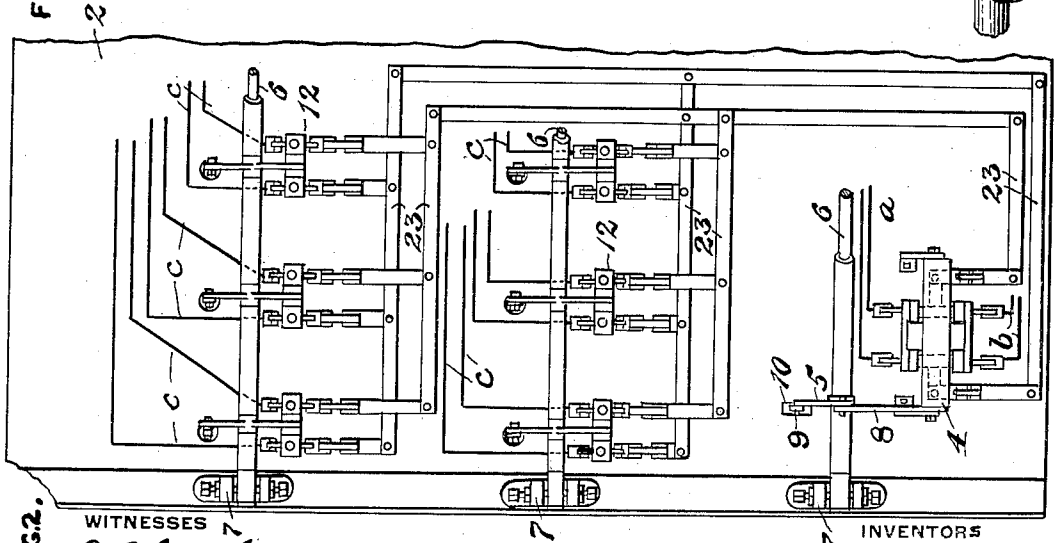


FIG. 4.

FIG. 2.



WITNESSES

F. E. Gaither

Ella McConnell

INVENTORS

A. N. Rogers

Wm. F. O'Neill

By Robbins Doolittle & Lyon

UNITED STATES PATENT OFFICE.

ALBERT N. ROGERS, OF IRWIN, AND WILLIAM F. O'NEILL, OF WILKINSBURG, PENNSYLVANIA, ASSIGNORS TO PENN ELECTRICAL & MANUFACTURING COMPANY, OF IRWIN, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

DEAD-FACE SWITCHBOARD.

1,297,912. Specification of Letters Patent. Patented Mar. 18, 1919.

Application filed April 17, 1914. Serial No. 832,485.

To all whom it may concern:

Be it known that we, ALBERT N. ROGERS and WILLIAM F. O'NEILL, citizens of the United States, respectively residing at Irwin, in the county of Westmoreland and State of Pennsylvania, and Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Dead-Face Switchboards, of which the following is a specification.

A dead-face switch board is characterized by the arrangement of the several switch operating devices at the front of the board and with all of the switches, conductors and other electrical connections at the rear thereof so that no charged or current-carrying parts are exposed. These boards are largely used in theaters and other places where a multiplicity of light circuits are controlled from a single station, in many municipalities the use of such boards in theaters being compulsory.

As heretofore constructed, the switches, conductors and other electrical connections and devices are supported at a distance rearwardly from the dead-face, there being usually sufficient space between such support and the dead-face board for workmen to enter for making necessary adjustments, repairs, etc. This intervening space is traversed by the operating connections extending to the switch-throwing devices at the front of the board, and their presence renders work within such space difficult and hazardous. Furthermore, the switch board of such prior construction takes up considerable room where space is valuable, as in case of a theater it must be conveniently located on the stage.

The switch board of the present invention is designed to obviate these difficulties by utilizing the rear surface of the dead-face board for supporting all of the switches and their associated electrical connections, with the switch-throwing devices mounted on the front of the board and operatively connected to the switches, preferably by means of connecting devices which are movable through openings formed in the board for that purpose. The live parts are thereby as effectually guarded and are as thoroughly isolated from the front of the board as though spaced backwardly therefrom in the manner heretofore customary, as above explained. Such arrangement has the further advantage of compactness and saving of floor space, it being possible to place the single board closer to a wall and in materially less space than heretofore. Also, the entire apparatus is conveniently assembled on a single support, and the switches, electrical connections, etc., are readily accessible without hindrance from obstructing connecting devices inherent in dead-face switch boards of former design.

In the accompanying drawings, Figure 1 is a front elevation of a portion of a dead-face switch board embodying the invention, and Fig. 2 is a rear elevation of the same. Fig. 3 is an end or edge view shown partly in section. Fig. 4 is a detail of a portion of the switch-throwing mechanism.

Referring to the drawings, the upright switch board 2 is commonly formed of slate, marble, or an equivalent insulating substance, and the front surface thereof is ordinarily provided with a facing 3 of asbestos fiber or other suitable insulating surface-finishing material.

It is characteristic of the invention that the switches and other current carrying parts are supported by board 2 at its rear face, while the switch-throwing devices are mounted on the front or dead-face, suitable operating connections being interposed from one to the other. No novelty is claimed herein for the switches, nor for the throwing devices, excepting as they are mounted in operative relation on the single board.

In the illustrated embodiment, three tiers of switches are shown arranged one above the other, although it will be understood that such grouping is merely illustrative of one of many possible arrangements, determined by the number and location of circuits to be controlled. In the illustrated embodiment, the lower switch 4 is in the form of a double-throw double pole switch for supplying current from either of two circuits *a* or *b* as may be desired. One of these circuits may be for direct current, and the other for alternating current, or they may be alternative supplies of like current from different sources, a compulsory requirement not unusual in theater lighting. The operating quadrant 5 for switch 4 is mounted on a bearing-forming shaft 6, and this

shaft is supported by brackets 7 secured to and projecting backwardly from the rear face of board 2. A link 8 connects the quadrant with the switch, and another link 9 extends from the quadrant through an aperture 10 in the board to the switch-throwing lever 11 at the front face of the board. In the upper tiers of switches, similar levers 11 are each connected by a link 9 with the single throw double-pole switches 12, mounted, like switch 4, on shafts 6 and supporting brackets 7 at the rear face of the board.

The several operating levers 11 have the usual arrangement whereby they may be thrown individually, or all of the levers of a tier simultaneously by a master lever 13. The mounting for each tier of operating levers 11 consists of a shaft 14 which is supported by bearings or bracket 15, the latter and brackets 7 projecting from the faces of the board sufficiently to afford the necessary clearance or throw for the switches and levers. One of the individual levers 11, for which no novelty is claimed, is illustrated in detail in Fig. 4. Referring thereto, the angular lever arm 16 is loosely mounted on shaft 14 and the handle-carrying stem 17 is movable in arm 16 and is held normally in inwardly projected position by coiled spring 18 with its inner extremity in engagement with a notch 19′ of sleeve 20 secured to shaft 14, and when in engagement with such notch, the lever and shaft 14 are rigidly connected and adapted to be operated by the master lever 13. For operating any one of levers 11 individually, or for preventing such lever from being operated with the others of the group by the master lever, the handle-carrying stem 17 is simply turned and thereby raised against the pressure of spring 18 by pin 21 riding to the upper end of the cam guide 22 on arm 16, thereby retracting the stem from the notch of sleeve 20 so that shaft 14 may revolve without turning arm 16, or on the other hand, the released lever 11 may be turned on shaft 14 and its connected switch thrown without affecting any other lever and switch of the group.

These several arrangements are shown for the purpose of illustrating the adaptability of the dead-face single switch board of the present invention to the various uses and requirements necessary in switch boards of this general type, the front or exposed face of the board having all of the operating parts as conveniently arranged and as accessible as though the board proper were not utilized as a support for the switches.

Upon referring to Fig. 2, it will be seen that in addition to supporting the several switches, the rear face of board 2 also serves to sustain the several bus bars 23 and the connections therefrom to the switches, also the several circuits *c* leading from the switches, all of these parts and connections being readily accessible at the rear of the board, access thereto not being retarded by such operating devices as are necessarily interposed when separate and spaced apart supports are provided for the switches and the operating levers.

We claim:—

1. In a dead face switch board, a vertical panel of insulating material provided with an aperture extending therethrough, a double throw double pole switch directly mounted on the rear of said panel, a bell crank lever also mounted directly on the rear of said panel and adjacent said aperture, a link connecting one arm of said lever to the swinging portion of said switch, an operating lever mounted on the front of said panel and a link extending through said aperture and connecting said bell crank lever and said operating lever.

2. In a dead face switch board, a vertical panel having an aperture extending therethrough from front to rear, a double throw double pole switch having a switching contact located between stationary contacts mounted directly on the rear of said panel and a bell crank lever mounted on the rear of said panel and having one arm thereof opposite said aperture, a link connecting the other arm of said lever to the swinging portion of said switch, an operating lever mounted on the front of said panel and a link extending through said aperture and connecting the arm of said bell crank opposite said aperture with said operating lever.

3. In a dead face switch board, a vertical switch board panel of insulating material and provided with an aperture extending therethrough from front to rear, a double throw double pole switch secured directly to the rear of said panel, a bell crank lever mounted on the rear of said panel between said switch and said aperture, a link connecting one arm of said bell crank with said switch, another link connected to the other arm of said bell crank and extending through said aperture and an operating handle mounted on the front of said panel and connected to the link extending through said aperture.

In testimony whereof we affix our signatures in presence of two witnesses.

ALBERT N. ROGERS.
WILLIAM F. O'NEILL.

Witnesses:
WILLIAM G. GARBER,
GEO. B. GRAFTON.