No. 739,052. PATENTED SEPT. 15, 1903.

B. BEERWALD.

SWITCHBOARD.

APPLICATION FILED MAY 26, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

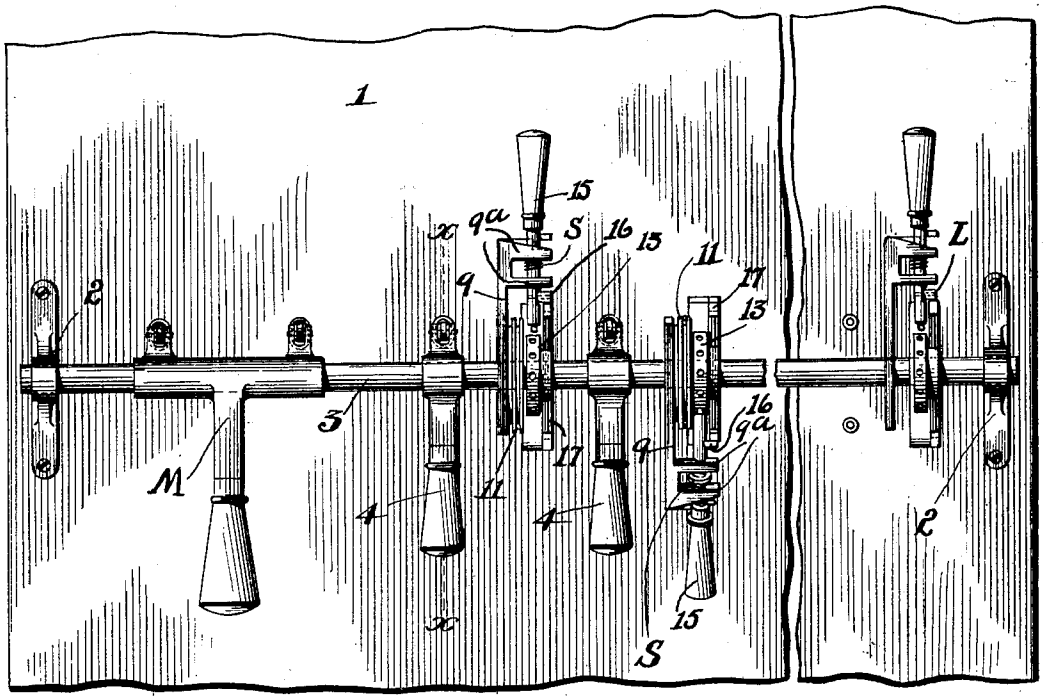
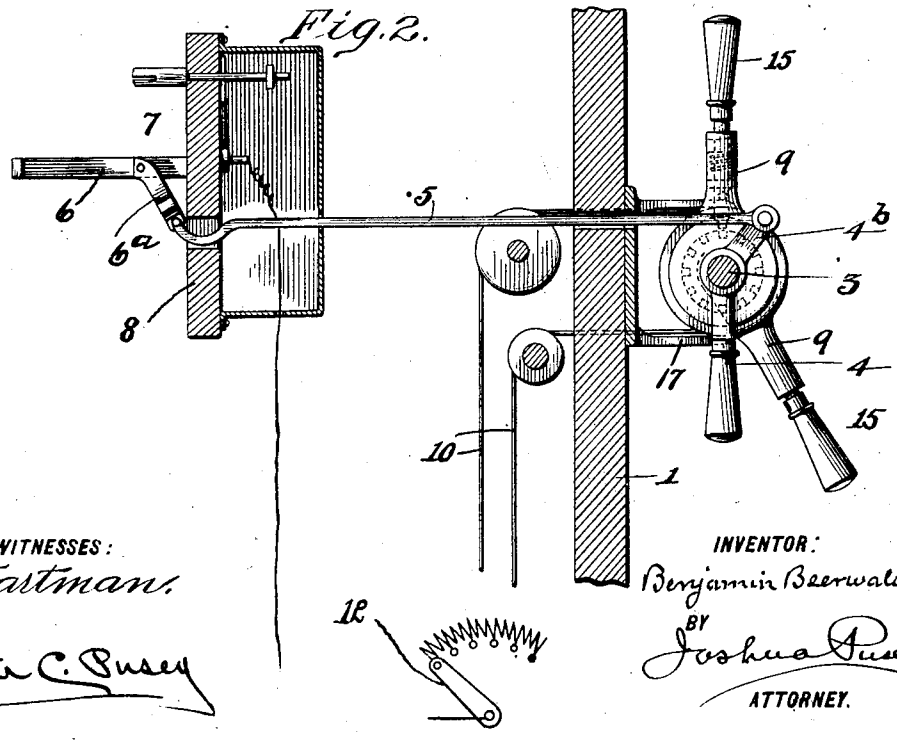


Fig. 2.



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SWITCHBOARD.

APPLICATION FILED MAY 26, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 3.

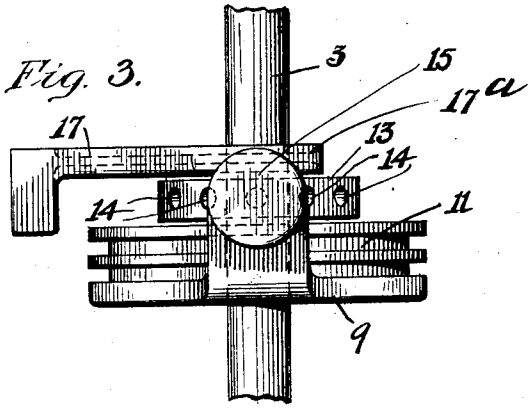


Fig. 4.

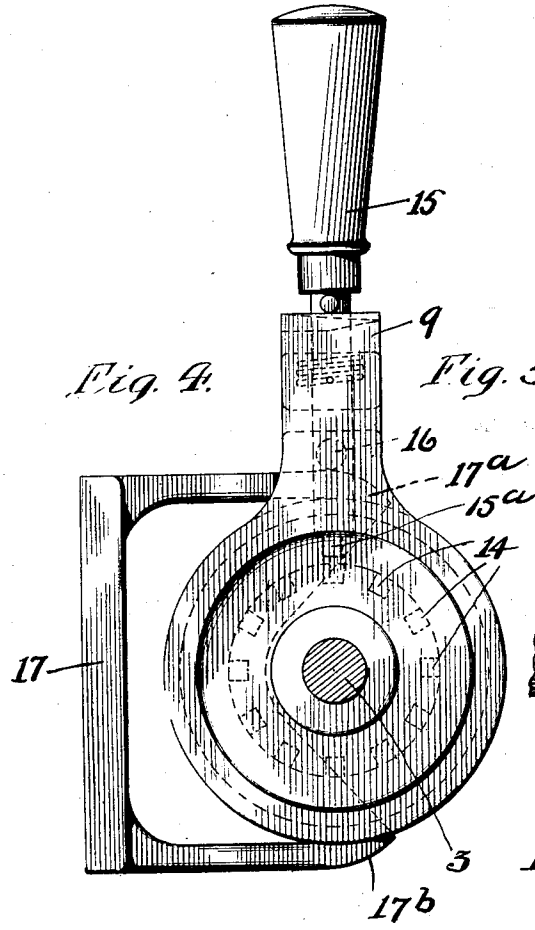
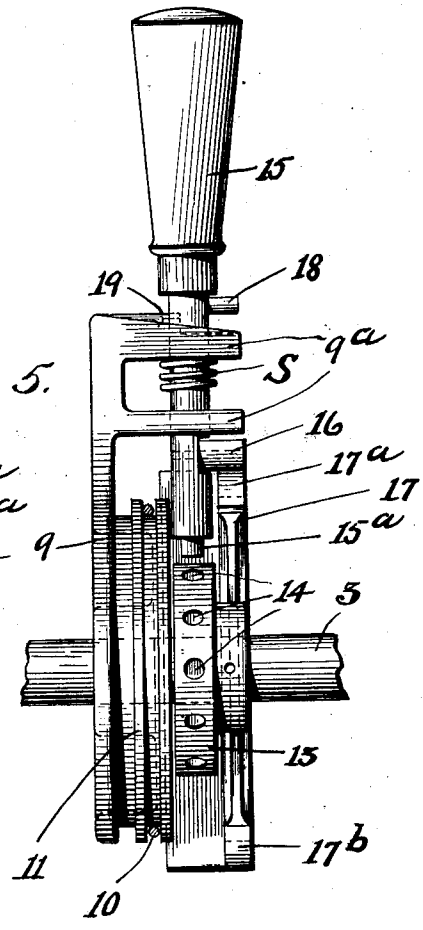


Fig. 5.



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No. 739,052. Patented September 15, 1903.

UNITED STATES PATENT OFFICE.

BENJAMIN BEERWALD, OF NEW YORK, N. Y.

SWITCHBOARD.

SPECIFICATION forming part of Letters Patent No. 739,052, dated September 15, 1903.

Application filed May 26, 1903. Serial No. 158,785. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN BEERWALD, a citizen of the United States, residing at the city of New York, in the State of New York, have invented certain new and useful Improvements in Switchboards, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, of which—

Figure 1 is a front view of a portion of a switchboard embodying my invention. Fig. 2 is a section on line *x x*, Fig. 1. Fig. 3 is a plan view, enlarged, of one of the rheostat-operating arms and coacting parts. Fig. 4 is a side elevation of Fig. 3. Fig. 5 is a front view of Fig. 4.

My invention relates to improvements in electrical switchboards, more particularly to switchboards such as are used in connection with the lighting of theaters and the like.

The object of the invention is to provide such a switchboard in which the "dimmer" or rheostat-operating mechanism shall be much simplified and more convenient to operate.

To this end the invention comprises certain constructions and combinations of mechanism, as hereinafter set forth.

Referring to the accompanying drawings, 1 is the face-plate of the switchboard, on the front face of which is journaled in brackets 2, Fig. 1, a horizontal shaft 3. This shaft has journaled thereon one or more (in the present instance two) levers 4, the long arm 4^a of each of which serves as a handle and the short arm 4^b is connected by a rod 5 with an arm 6^a of a pivoted switch-lever 6 of an ordinary knife-switch 7, which switch is mounted on a bar 8 some distance in the rear of the face-plate 1. By this construction the switch is removed from the face of the board, and also the lever connections described cause the switch to make a quick break, and consequently little burning or sparking of the parts.

Adjacent to each of the switch-operating levers and journaled upon shaft 3 is an arm 9, which is adapted by suitable manipulation through cords or chains 10, secured thereto and adapted to wind upon a flanged hub portion 11 thereof, to actuate a rheostat, (indicated at 12, Fig. 2,) the circuit through which rheostat is controlled by the switch 7, operated by the adjacent switch-operating lever 4. Adjacent to the said flanged hub portion 11 of the arms 9 is mounted upon shaft 3 a wheel 13, having in its periphery a number of radial holes or sockets 14.

The arm 9 is provided with projecting lugs 9^a, through which passes and is adapted to slide radially—that is, toward and away from the center of shaft 2—a rod 15, whose inner end 15^a is adapted to enter and engage any one of the sockets 14 in the wheel 13 when desired and for a purpose hereinafter appearing.

On the rod 15, between the lugs 9^a, is a spring S, which tends to press the end 15^a of the rod into engagement with a hole 14 of the wheel 13. Projecting from the outer side of the rod 15 is a roller or projection 16, which is in line with a forked bracket 17, secured to and projecting forwardly from the face-plate 1 of the switchboard. The free ends 17^a 17^b of the forks of this bracket are respectively extended to points somewhat in advance of a vertical line through the center of the shaft 3 and are beveled outwardly, as seen, to form cam-surfaces thereon.

Near one end of the shaft 3 is a "master-lever" construction similar in all respects to the arms 9, wheels 13, and correlated parts except that this master-lever is not connected with any rheostat and is used only to actuate all the other rheostat-operating devices on the said shaft 3. I have indicated this master-lever construction at L, Fig. 1. Near the opposite end of shaft 3 is a master-switch-operating lever M, which controls the circuits through all of the other switches 7, and so through the rheostats 12.

The manner of use of the device is as follows: The levers 4 being in the horizontal position—that is, in position to close the switches 7, and so permit the flow of current through the rheostats 12, it of course being understood that the master-switch M is first closed—and the arms 9 being respectively in the positions shown in Figs. 1 and 2—that is, the arm 9 on the left side of Fig. 1 in the upright

vertical position, with the roller or projection 16 thereof riding upon the upper cam end 17^a of the forked bracket 17, thus elevating the rod 15 and maintaining its inner end 15^a out of engagement with any of the sockets 14, in which position of the said arm 9 the lights controlled by the adjacent switch 7 and the rheostat 12, operated by said arm 9, are burning with their full luminosity, and the other arm 9 (on the right of Fig. 1) in a nearly opposite position, with its inner end 15^a in engagement with one of the sockets 14 on the corresponding wheel 13—the lights on the circuit operated thereby are at nearly their lowest point of luminosity, the other arms 9 (there being as many of such arms, &c., on said shaft 3 as there are circuits to be controlled) being in various positions, according to the brightness of the lights upon the respective circuits, and the master-lever L being in the position opposite to that shown in Fig. 1—that is, with its roller 16 riding upon the lower cam edge 17^b of the bracket 17. If it be desired to bring a single circuit, such as that controlled by the arm 9 on the right of Fig. 1, to a higher degree of luminosity, the handle of the rod 15 is grasped by the operator and it is pulled out longitudinally against the stress of spring S until the lower end 15^a is disengaged from the hole or socket 14, into which it had been entered. The bar or rod 15 is then given a slight rotation on its axis to bring a pin or projection 18, carried thereby, over and into engagement with a high surface 19 on the outer side of the outer lug 9^a of the arm 9, and thus the rod 15 is locked out of position to engage the sockets 14 of the wheel 3. The rod 15 and arm 9 are then rotated on their shaft 3, and thus through the medium of the cords or chains 10 operate the rheostat 12 and according to whether the movement is upwardly or the reverse brightening or dimming the lights on the circuit controlled thereby. If said arm, &c., are brought into the vertical position pointing upwardly, the lights are burning with their full degree of luminosity; but if brought to the reverse position vertically the lights are out. If it be desired to actuate all of the dimmers, this may be done by the manipulation of any one thereof or by the master-lever L. In this case the lower ends 15^a of the rods 15 are not disengaged from the sockets 14, and if one of the arms 9 is actuated it will cause (through the medium of shaft 3, on which said wheels are mounted) all of the other arms 9 to move with said shaft until the projections or rollers 16 ride upon the end 17^a or the end 17^b of the bracket 17, as the case may be, according to whether the lights are being raised or lowered, whereupon because of said lower ends 15^a being detached from the sockets 14 the revolution of the arms 9 will cease and all of them remain in the vertical position.

I remark that, if desired, the projection 18 and elevation 19, coacting therewith, may be omitted and the rod 15 held in the retracted position by the operator when required; but I would prefer to use such parts. I further remark that I do not limit myself to the precise arrangement of the parts, as other equivalent devices may be used within the range of skill of the mechanic.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a switchboard, the combination of a face-plate, a shaft journaled thereon, two or more wheels secured upon said shaft and provided with sockets in their peripheries, arms, journaled upon said shaft adjacent to said wheels, respectively, rheostats, connections between said rheostats and said arms, respectively, whereby rotation of the latter will operate said rheostats, rods carried by said arms and adapted to slide thereon to bring their inner ends into and from engagement with the sockets in said wheels, brackets projecting from said face-plate adjacent to said wheels and provided with upper and lower cam edges, and a projection on each of said rods adapted to ride upon either of said cam edges when said arm and rod are rotated, to vertical position, substantially as and for the purpose set forth.

2. In a switchboard, the combination of a face-plate, a shaft journaled thereon, two or more wheels secured upon said shaft and provided with sockets in their peripheries, arms, journaled upon said shaft adjacent to said wheels, respectively, rheostats, connections between said rheostats and arms, respectively, whereby rotation of the latter will operate the rheostats, spring-controlled rods carried by said arms and adapted to slide thereon to bring their inner ends into and from engagement with the sockets in said wheels, a bracket projecting from said face-plate adjacent to said wheels, respectively, and provided with upper and lower cam edges, and a projection on each of said rods adapted to ride upon one of said cam edges when said arm and rod are rotated to vertical position, substantially as and for the purpose set forth.

3. In a switchboard the combination of a face-plate, a shaft journaled thereon, two or more wheels secured upon said shaft and provided with sockets in their peripheries, arms, journaled upon said shaft adjacent to said wheels, respectively, rheostats, connections between said rheostats and said arms, respectively, whereby rotation of the latter will operate said rheostats, rods carried by said arms and adapted to slide thereon to bring their inner ends into and from engagement with the sockets in said wheels, the projection on said rod, a lug on said arm, with which said projection is adapted to engage to lock said rod out of position to engage said sockets, brackets projecting from said face-plate ad-

jacent to said wheels and provided with upper and lower cam edges, and a projection on each of said rods adapted to ride upon either of said cam edges when said arm and rod are rotated to vertical position, substantially as and for the purpose set forth.

In testimony whereof I have hereunto affixed my signature this 11th day of April, A. D. 1903.

BENJAMIN BEERWALD.

Witnesses:
ANDREW V. GROUPE,
WALTER C. PUSEY.