

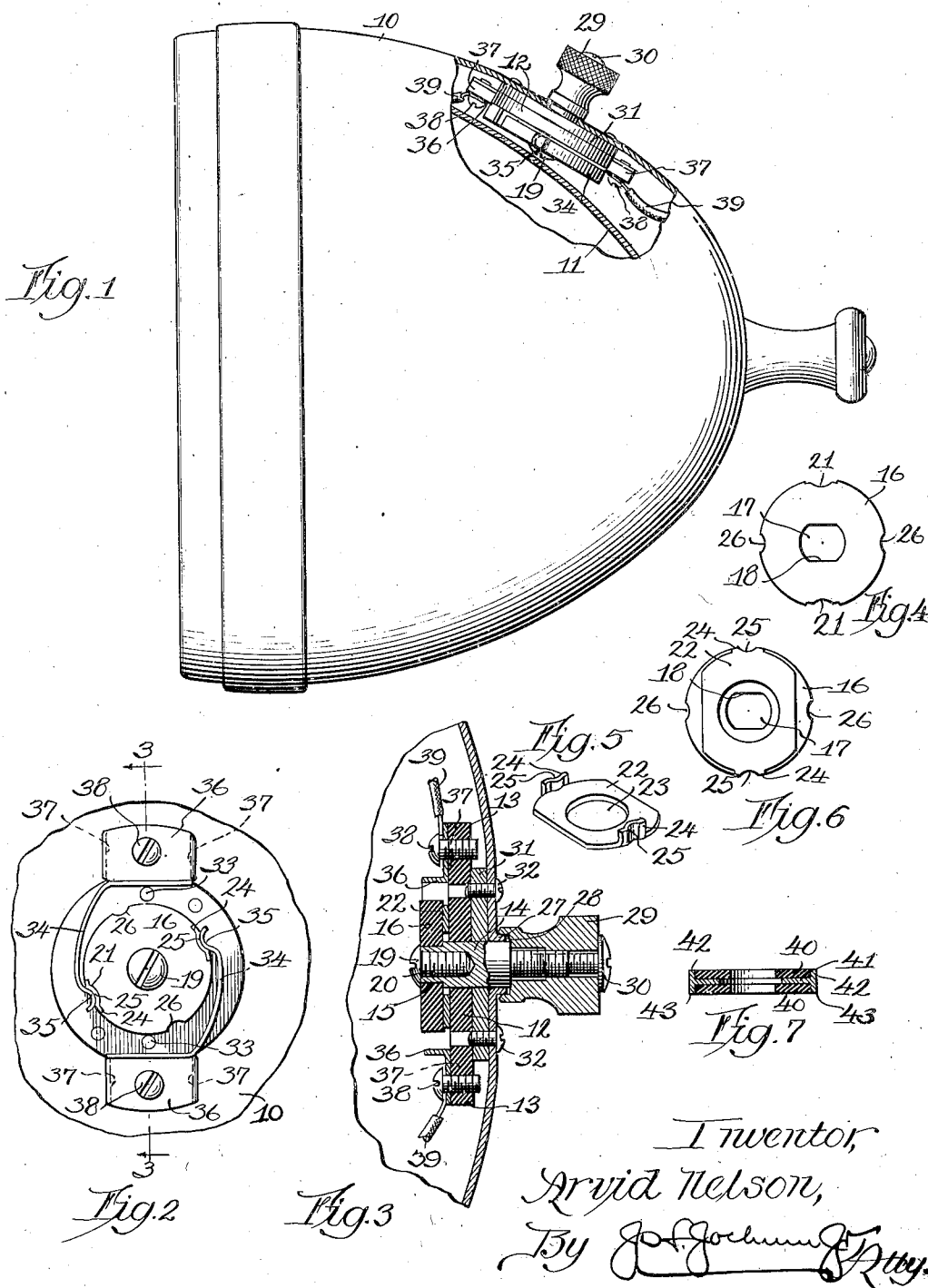
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A. NELSON

ROTARY SWITCH

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UNITED STATES PATENT OFFICE.

ARVID NELSON, OF CHICAGO, ILLINOIS.

ROTARY SWITCH.

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To all whom it may concern:

Be it known that I, ARVID NELSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rotary Switches, of which the following is a specification.

This invention relates to improvements in switches of the rotary type particularly adapted though not necessarily limited in its use with spot lights, and one of the objects of the same is to improve and simplify the construction of this type of switch and at the same time provide a switch which will be compact and comparatively thin in construction so that the same may be employed with what is known as double shell lamps.

To the attainment of these ends and the accomplishment of other new and useful objects as will appear, the invention consists in the features of novelty, in substantially the construction, combination and arrangement of the several parts hereinafter more fully described and claimed and shown in the accompanying drawing illustrating this invention and in which—

Figure 1 is a view in side elevation, partly broken away, of a spot light having a switch constructed in accordance with the principles of this invention applied thereto.

Figure 2 is a front elevation of the switch.

Figure 3 is a sectional view taken on line 3—3, Figure 2.

Figure 4 is a detail elevation of one of the rotary elements.

Figure 5 is a detail perspective view of the metallic element which is connected with the rotary element.

Figure 6 is a rear elevation of the rotary elements.

Figure 7 is a sectional view of a modified form of the invention.

Referring more particularly to the drawing the numeral 10 designates generally a spot light the inner shell 11 of which is spaced from the outer shell in the usual manner.

The switch is adapted to be connected with the outer shell and is disposed in the space between the two shells.

The switch consists essentially of a base 12 constructed of any suitable insulating material and the base is of a comparatively thin

construction, portions of the base being shaped to form laterally projecting lugs 13. Mounted in the base 12 and for a forward and backward rotation is a spindle 14 the end 15 of which projects beyond one face of the base and connected therewith is a rotatable disc like element 16 which is also preferably constructed of insulating material. The element 16 is provided with an aperture 17 therethrough the walls 18 of which are preferably flat and the extremity 15 of the spindle 14 is similarly shaped so that when the element 16 is applied to the extremity 15 of the spindle the two will be secured together for rotation. The disc 16 is held against displacement with respect to the spindle 14 preferably by means of a fastening screw 19 which passes into a threaded opening 20 in the end of the spindle, the head of the bolt 19 resting against the outer face of the disc 16. The disc 16 is provided in its periphery with recesses 21 opening therethrough and secured to one face of the disc 16 is a metallic element 22 which is provided with an aperture 23 therethrough and through which aperture 23 the spindle 14 passes. This aperture 23 is of a diameter considerably greater than the external diameter of the spindle 14 so that the metallic element 22 will be held out of electrical connection with the spindle 14. The element 22 is provided with laterally projecting lugs 24 which are shaped to form outwardly opening recesses 25 and the recesses 21 in the element 16 are of the same shape as the lugs 24 so that when the element 22 is placed against the face of the disc 16 the lugs 24 will be tightly seated in the recesses 21 and serve as a means for holding the plate or element 22 connected with the disc 16. The disc 16 is also provided with additional recesses 26 opening through the periphery thereof and intermediate the recesses 21, for a purpose to be hereinafter set forth.

The other end of the spindle 14 projects for a considerable distance beyond the opposite face of the base 12 and through an aperture in the outer shell of the spot light. This aperture is of a diameter sufficient to permit the spindle to pass therethrough and to rotate freely therein. An outwardly projecting flange 27 encompasses the opening in the outer shell of the lamp and this flange

27 is adapted to project into a recess 28 in the extremity of a handle 29 to form a water proof joint between the handle and the shell, the handle 29 being secured to the spindle 14 preferably by being threaded thereon and a fastening bolt 30 extends through the end of the handle and has threaded engagement with the end of the spindle.

Interposed between the base 12 of the switch and the outer shell of the spot light 10 is a spacing member 31 which may be of any desired size and configuration but is of a size so that it will not extend under the projections 13 of the base 12. The switch is secured in position preferably by means of fastening screws 32 which pass through the outer shell of the spot light 10 and are threaded into the spacing member 31, the latter being secured to the base 12 preferably by means of fastening devices 33.

The lugs 24 of the element 22 form contacts on opposite faces of the rotary element 16 and co-operating with these lugs 24 are spring contact members 34 the free extremities of which are preferably shaped to form curved portions 35 adapted to enter the seats 25 in the lugs 24 when the switch is rotated and are also adapted to be unseated from the seats 25 on the further rotation of the disc 16 and when the portions 35 of the contacts 34 are unseated from the recesses 25 the portions 35 will ride about the periphery of the disc 16 until the recesses 26 are presented to the portions 35 of the contacts 34 at which time the said portions will enter the recess 26 to hold the switch in an inoperative position.

The outer faces of the lugs 24 coincide with the periphery of the disc or element 16 so that no shoulders will be formed between the parts and will permit the disc to be freely rotated by the handle 29.

These contacts 34 may be of any desired size and configuration and may be secured in position in any suitable manner but are preferably formed with a base portion 36, the edges 37 of which are shaped to form spaced flanges projecting laterally from one face of the base. The distance between the flanges 37 is slightly greater than the width of the projections 13 on the base 12 so that when the base 36 of the contacts 34 are placed against the projections 13 the flanges 37 will stand adjacent the sides of the projection and a fastening screw 38 passes through the base 36 of the contacts 34 and has threaded engagement with the projections 13. These fastening screws 38 serve as binding or anchor posts for the conductor wires 39 and by the provision of the spacing member 31 interposed between the base 12 of the switch and the outer shell of the spot light 10, it will be manifest that the projections 13 will be spaced from the shell of the lamp so that the adjustment or screw-

ing down of the screw or binding post 38 into the projection 13 to fasten the contacts 34 and the conductor wires 39 will prevent the end of the screw or binding post 38 from contacting with the outer shell of the light 10 and if such contact were made would cause a short circuit.

The flanges 37 on the face 38 of the contacts 34 engaging over the sides of the projections 13 serve as a means for preventing displacement of the contacts 34 when the screws or binding posts 38 are loosened to permit the attaching or detaching of the end of the conductor wires 39.

It will be manifest that with this form of switch the parts will be compactly arranged and is of a substantially thin construction so as to permit the switch to be installed in a comparatively small space. By rotating the handle 29 the contacts 24 and 35 will be brought into and out of engagement with each other to make or break the circuit and when the circuit is broken the recesses 26 receive the portions 35 of the contacts 34 to limit the rotation of the element 16 and also holds the element in an inoperative position.

The switch may be readily removed by removing the screw 30 and then the handle 29 after which the screws 32 may be removed and the spindle can be drawn through the lamp shell.

In Figure 7 is shown a modified form of the rotary element in which the disc corresponding with the element 16 is composed of two members 40 having a metallic element 41 interposed therebetween and the element 41 is provided with laterally projecting lugs 42—43 on opposite sides thereof similar to the lugs 24 of the element 22 and these lugs 42—43 are seated in the recesses in the periphery of the elements 40 similar to the recesses 21 in the element 16.

While the preferred forms of the invention have been herein shown and described, it is to be understood that various changes may be made in the details of construction and in the combination and arrangement of the several parts, within the scope of the claims, without departing from the spirit of this invention.

What is claimed as new is:—

1. A rotary switch embodying a base of insulating material, a rotary spindle mounted in the base and projecting beyond one face of the base, a forwardly and backwardly rotatable disc of insulating material connected with the spindle and having recesses in its periphery, a metallic element connected with the said disc and out of electrical connection with the spindle, laterally projecting recessed lugs carried by the said element, said lugs being seated in the notches in the periphery of the disc and rotatable with the disc, and spring terminals con-

5 nected with the said base and on the face of the base opposite to that face beyond which the spindle projects and adapted to enter the recesses in the said lugs when the disc is rotated in either direction.

10 2. A rotary switch embodying a base of insulating material, a rotary spindle mounted in the base, a forwardly and backwardly rotatable disc of insulating material connected with the spindle adjacent one face of the said base and having recesses in its periphery, a metallic element connected with the said disc and out of electrical connection with the spindle, laterally projecting 15 recessed lugs carried by the said element, said lugs being seated in the notches in the periphery of the disc and rotatable with the disc, the free end of the spindle projecting beyond the other face of the base, and spring 20 terminals connected with the said base on the face opposite to the face from which the spindle projects and adapted to enter the recesses in the said lugs when the disc is rotated in either direction, the outer faces of 25 the body of the said lugs coinciding with the periphery of the said disc.

3. A rotary switch embodying a base of insulating material, a rotary spindle mounted in the base and projecting beyond one 30 face of the base, a forwardly and backwardly rotatable disc of insulating material connected with the spindle adjacent one face of the base and having recesses in its periphery, a metallic element connected with the said disc and out of electrical connection with the spindle, laterally projecting 35 recessed lugs carried by the said element, said lugs being seated in the notches in the periphery of the disc and rotatable with the disc, and spring terminals connected with that face of the said base opposite to the face beyond which the free end of the spindle extends and adapted to enter the recesses in the said lugs when the disc is rotated 40 in either direction, there being additional recesses in the periphery of the disc intermediate the first recited recesses and adapted to receive the said terminals.

4. A rotary switch embodying a base, a 50 forwardly and backwardly rotatable spindle mounted upon said base and projecting beyond one face thereof whereby the spindle may be rotated, a disc of insulating material connected with the spindle for rotation 55 therewith and adjacent the opposite face of the base, a metallic element carried with the disc and having spaced terminal engaging portions, spring terminals mounted upon the base and on that face adjacent which the disc is located and adapted to engage said 60 portions when the disc is rotated in either direction, fastening devices for securing the said terminals to the base, a support, means for securing the base to the support and 65 spacing means interposed between the said

base and the said support whereby the said fastening devices will be prevented from contacting with the said support.

5. A rotary switch embodying a base, a forwardly and backwardly rotatable spindle 70 mounted upon the base and projecting beyond one face thereof whereby the spindle may be rotated, a disc of insulating material connected with the spindle for rotation therewith and adjacent the opposite face of 75 the said base, contacts carried by the disc, contact terminals co-operating with the said contacts, a support having an aperture therethrough, means for securing the base to the support, said spindle projecting 80 through the aperture, an outwardly projecting flange on the support encompassing the aperture, and a handle connected with the end of the spindle for rotating it, the lower 85 end of the handle having a recess to receive the said flange to form a water tight joint.

6. A rotary switch embodying a body, a spindle journaled therein, a disc of insulating material carried by the spindle, spaced 90 contacts arranged about the periphery of the disc, portions of the body being shaped to form projections, contact terminals co-operating with the said contacts, portions of the said terminals being shaped to form 95 flanges adapted to engage over the respective said projections, and terminal screws for fastening the terminals upon the body, said flanges serving to prevent displacement of the terminals when the said screws are 100 loosened.

7. A rotary switch element embodying a disc of insulating material having recesses opening through its periphery, a spindle connected with the disc for rotating it forwardly and backwardly, a metallic element, 105 and laterally projecting lugs connected with the said metallic element, said lugs being seated in the said recesses and forming spaced contacts about the periphery of the disc, the said metallic element being out of 110 electrical connection with the said spindle, the outer periphery of the said lugs coinciding with the periphery of the said disc.

8. A rotary switch element embodying a disc of insulating material having recesses 115 opening through its periphery, a spindle connected with the disc for rotating it forwardly and backwardly, a metallic element, and laterally projecting lugs connected with the said metallic element, said lugs being 120 seated in the said recesses coinciding with the periphery of the disc and forming spaced contacts about the periphery of the disc, the said metallic element being out of electrical connection with the said spindle, 125 said disc having one or more additional recesses opening through its periphery intermediate the first recited recesses.

9. A substantially flat and comparatively thin rotary spot light switch embodying an 130

insulated supporting base adapted to be placed in close proximity to the spot light shell, a spindle journaled in the base, one end of the spindle projecting through an opening in the shell whereby the spindle may be freely rotated forwardly and backwardly, a disc of insulating material secured to the spindle adjacent that face of the base opposite the face adjacent which the said end of the spindle is located, electrical contacts secured to the periphery of the disc, and terminals connected with that face of the base adjacent which the disc is located and adapted to engage said contacts when the disc is rotated in either direction.

10 A substantially flat and comparatively thin rotary spot light switch embodying an insulated supporting base adapted to be placed in close proximity to the spot light shell, a spindle journaled in the base, one end of the spindle projecting through an opening in the shell whereby the spindle may be freely rotated forwardly and backwardly, a disc of insulating material secured to the spindle adjacent that face of the base opposite the face adjacent which the said end of the spindle is located, electrical contacts secured to the periphery of the disc, and terminals connected with that face of the base adjacent which the disc is located and adapted to engage said contacts when the disc is rotated in either direction, there being recesses in the periphery of the disc intermediate the said contacts adapted to receive the said terminals for yieldingly locking the disc.

20 In testimony whereof I have signed my name to this specification, on this 27th day of September, A. D. 1921.

ARVID NELSON.