W. P. HAMMOND.

ELECTRICAL SWITCH.

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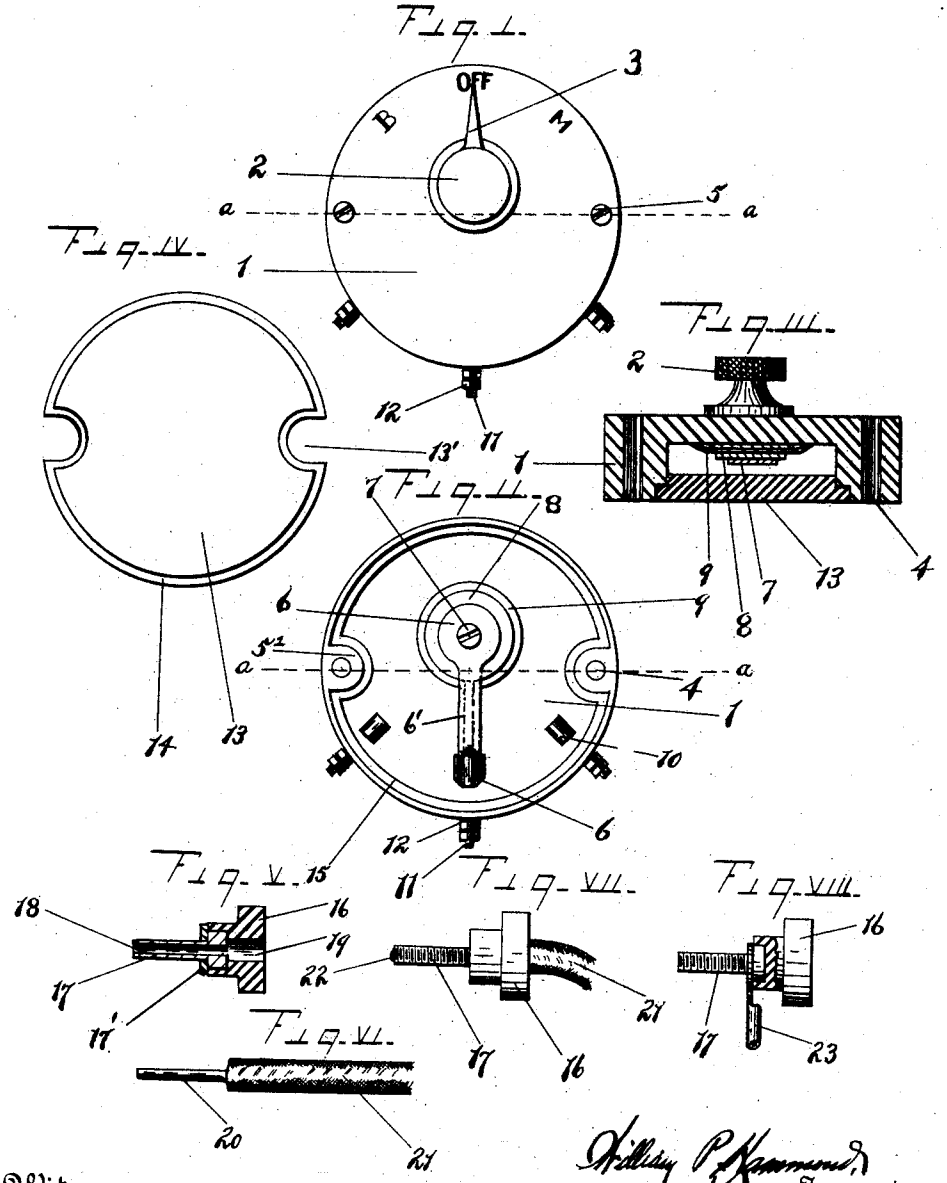
977,797. Patented Dec. 6, 1910.



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ELECTRICAL SWITCH.

977,797. Specification of Letters Patent. Patented Dec. 6, 1910.

Application filed February 24, 1908. Serial No. 417,279.

To all whom it may concern:

Be it known that I, WILLIAM P. HAMMOND, a citizen of the United States, and a resident of Passaic, county of Passaic, State of New Jersey, have invented certain new and useful Improvements in Electrical Switches, of which the following, taken in connection with the accompanying drawing, forms a complete and concise description.

My invention more particularly comprehends a water-proof switch for use in connection with motor boats wherein all the contacts and switching mechanism is confined within a water-tight base; and, further, certain modifications, all of which will be understood from the following description:

Referring to the accompanying drawing, in which like reference characters indicate like parts throughout, Figure I represents a top plan view of a switch embodying my invention. Fig. II is a bottom plan view thereof. Fig. III is a sectional view taken on line —*a*—*a*— of Figs. I and II. Fig. IV is a bottom plan view of the lower cover of the switch. Fig. V is sectional view of a modified form of connecting terminal. Fig. VI is a view in side elevation of electrical conductor for use in connection therewith. Fig. VII is a side view of the terminal and conductor, just described, in combination. Fig. VIII is a modified form of the terminal.

1— indicates a base of suitable insulating material, preferably an imitation rubber composition. The base is provided with a hole or perforation accommodating the knob or button —2—, which controls and operates the switching mechanism within the base. The knob or button —2— has connected therewith an index pointer —3—. The base is provided with perforations —4—, through which fastening screws —5— pass, for fastening the switch to a convenient part of the boat. It will be noted that these holes or perforations —4— do not perforate the interior of the switch, but perforate the interiorly extending lugs —5′—.

A switch arm —6— is fastened to the knob or button —2— by means of an attaching screw —7—. Below the attaching end of the arm —6— is provided two washers —8— and —9—; the washer —9— being a spring washer.

10— indicates suitable contacts, which are three in number, preferably molded in the composition as shown. Removably connected with the contacts —10— are provided binding posts or screws —11— which pass through suitable holes (not shown) in the base and screw into the contacts at right angles thereto. The central contact—diametrically opposite the word "Off"—on which the switch blade —6— is resting, as shown in Fig. II, is in electrical contact with the washer —8— by a strip of metal shown in dotted lines and indicated by the numeral —6′—. These binding posts are provided with the usual binding nuts —12—, as shown.

13— indicates the lower cover of the base, having cut-out portions —13′—, and has provided thereon a flange —14—. The cut-out portions —13′— coincide with the interior lugs of the base as shown. This cover —13— snugly fits in the base; the flange —14— resting upon the interior flange —15— of the base so as to form a tight connection.

To further render the interior of the base water-proof, I use paraffin for hermetically sealing the same. The spring washer —9— exerts spring tension against the arm —6—, thus giving the necessary resilient movement to the arm in passing from one terminal connection to the other, so that whenever the arm —6— rides upon any one of the contacts —10—, it will require some little force to remove it therefrom. This is important, since the operator can feel when he has made an effective contact. It is also advantageous when operating in the dark, when it is impossible to notice the position of the index pointer —3—.

The base is marked with the letters shown, which signify the different circuits that may be established by the turning of the knob or button —2—; to wit, when the pointer —3— is at —B—, the battery is brought into circuit; and when the pointer is turned to the letter —M—, the switching blade is revolved to the contact diametrically opposite, thus establishing circuit with the magneto, and when the pointer is revolved to "Off," the circuit is broken.

Referring now in detail to Figs. V to VIII, in which I have illustrated modified terminal connectors, I will proceed to describe the same. To use these connectors I

dispense with the binding posts —11— and binding nuts —12—. These, as already decribed, may be unscrewed from the contacts —10— and the terminal attachment —16— used in their stead. The terminal —16— is formed of a similar composition as to that of the base heretofore described, and is provided with a large central opening —19— and a metallic screw —17— embedded therein, said screw being provided with a central axial opening —18— of smaller diameter than the opening —19—. These openings —18— and —19— are a little larger than the diameter of the conductor to be received therein.

To connect a conductor with the terminal attachment —16—, it is necessary to bare or expose a portion of the conductor, as shown in Fig. VI. It will be seen, therefore, that when the conductor is threaded through the attachment —16—, the conductor —20— will occupy space —18—, while the insulated portion —21— will occupy the space —19—. I provide a soft rubber washer —17'— to fit over the screw —17—. Thus it will be seen that an absolutely waterproof connection is obtained. To hold the conductor in place, I drop a small particle of solder, indicated at —22—, which forms a connection between the screw —18— and the conductor —20—.

I may, if desired, employ the specific form of terminal connector shown in Fig. VIII. In this form of connector I do not perforate the terminal connector as in the structure just described, but use a connecting attachment —23—. This attachment is provided with an eye which fits over the screw 17.

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

1. In an electric switch, the combination of a hollow base formed of insulating material and having an opening in the front thereof, a knob extending through the opening and journaled therein, a series of contacts embedded in the base and exposed on the interior thereof, a switch arm secured to the inner end of the knob and adapted to be turned thereby into engagement with the various contacts, a concave spring washer surrounding the knob on the interior of the base and interposed betwen the base and the switch arm so as to bear outwardly against the latter and draw the knob closely against the base for the purpose of producing a water proof joint, and terminal attachments inserted in the base from the exterior thereof and engaging the before mentioned contact members.

2. In an electric switch, the combination of a hollow base formed of insulating material and having an opening in the front thereof, a knob extending through the opening and journaled therein, a series of contacts embedded in the base and exposed on the interior thereof, a switch arm secured to the inner end of the knob and adapted to be turned thereby into engagement with the various contacts, a pair of washers surrounding the knob on the interior of the base and interposed between the base and the switch arm, the washer adjacent the switch arm being in electrical connection with one of the contacts, while the washer adjacent the base has a concave formation and acts as a spring to draw the knob inwardly so as to produce a tight joint between the same and the base, and terminal attachments extending into the base from the exterior thereof and engaging the contact members.

3. In an electric switch, the combination of a hollow base formed of insulating material and having an opening in the front thereof, a knob extending through the opening and journaled therein, a series of contacts embedded in the base on the interior thereof, a switch arm secured to the inner end of the knob and adapted to be turned thereby into engagement with the various contacts, and terminal attachments inserted in the base from the exterior thereof and arranged at right angles to the contact members, the inner ends of the terminal attachments having a threaded engagement with the said contact members.

Signed at New York in the county of New York and State of New York this 21st day of February 1908.

WILLIAM P. HAMMOND.

In presence of—

ANNA P. BENNETT,

WOOLSEY A. SHEPARD.