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WATERPROOF SHIELD FOR TOGGLE SWITCHES

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Fig. 1.

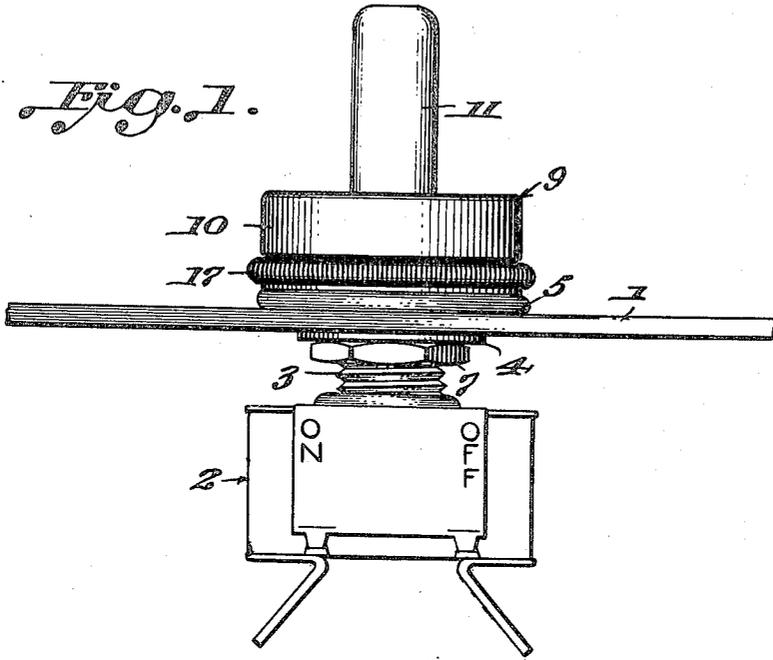
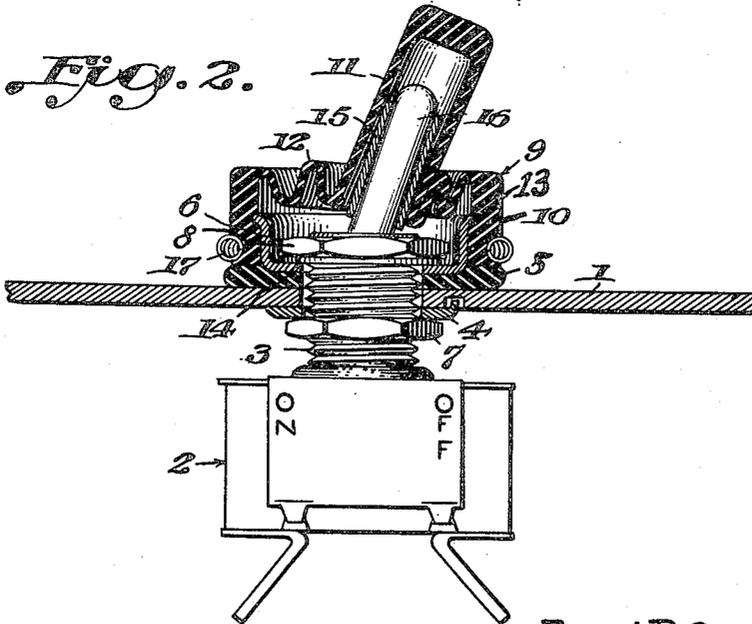


Fig. 2.



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WATERPROOF SHIELD FOR TOGGLE SWITCHES

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7 Claims. (Cl. 200—172)

1 It is an object of this invention to provide a multiple part protecting waterproof shield for a toggle switch and similar electrical equipment whereby the securing means for the shield may be located wholly within the shield.

It is an object of this invention to provide a waterproof protecting shield of flexible material, such as rubber, rubber composition or any other suitable material.

It is also an object of this invention to provide an unique structural means whereby the flexible waterproof shield may be secured to the switch in a waterproof fashion defining a waterproof connection between said switch, switch casing and said shield.

It is an object of this invention to provide a flexible shield having a tubular handle portion closely embracing a tubular bearing sleeve which is adapted to slidably engage the toggle handle of the switch.

Other features of novelty will appear in the specific description of the invention as disclosed in the drawing which represents the preferred embodiment of the invention.

In the drawings:

Fig. 1 is a side elevation of a toggle switch having our waterproof protecting shield secured thereto.

Fig. 2 is a central vertical section through our protecting shield as applied to a conventional toggle switch.

In the drawings the panel portion 1 of the switch casing is a support for the toggle switch 2 having a screw threaded hollow stem 3. The stem 3 passes through the washer 4, panel portion 1, the flexible washer 5 the rigid tubular flanged connecting element 6 and is secured and supported in a waterproof condition by the nuts 7 and 8.

The flexible waterproof shield 9 comprises a skirt 10 and a tubular handle portion 11 connected by a flexible diaphragm 12. The tubular connecting element 6 is provided with an out turned flange or bead 13 on one end and an in-turned flange 14 on its other end. The tubular handle portion 11 is provided with a bearing sleeve 15 received therein. The bearing sleeve 15 loosely and slidably engages the toggle operating means or handle 16.

The skirt 10 is preferably provided with a shallow annular groove to receive the clamping ring 17.

The shield 9 and the flexible washer 5 are preferably made of plastic material such as rubber, rubber composition, or any other suitable plastic flexible material that may accomplish the desired function of the shield 9.

The bearing sleeve 15 may be made of brass

2 or any other comparatively rigid material that will slide easily along the operating handle 16 of the switch 2.

It is to be observed that the shield 9 when secured in position with the washer 5 forms a complete imperforate waterproof cover for the outside portion of the toggle switch 2.

The imperforate shield or cover is, at least, analogous to and the equivalent of insulating means since it maintains an insulated path for the flow of electricity and the operator is insulated electrically from the switch by the rubber shield or cover.

The skirt 10 of the shield 9 is firmly secured to the rigid tubular flanged connecting element 6 by the helical spring band or clamping ring 17.

The application and attachment of our waterproof shield 9 to a conventional toggle switch 2 on a panel portion 1 is very simple. When the toggle switch is in secured position on a panel portion 1 by the nuts 7 and 8, it is merely necessary to remove the nut 8, apply the yieldable waterproof washer 5 also the tubular flanged connecting element 6 and re-apply the nut 8 to the threaded stem 3 as shown in Fig. 2. Next the skirt 10 is applied over the flanged free end of the element 6 in the meantime the operating means 16 of the toggle switch is guided into the bearing sleeve 15 and, lastly, the spring clamping ring 17 is applied to the skirt 10 to securely maintain the shield 9 on the switch 2.

It is to be noted that our shield construction is essentially an attachment to a known type of toggle switch that is in general use. Our attachment comprises a plurality of attachable and detachable elements, parts or units. One unit includes a tubular handle integrally connected to a tubular skirt portion by a flexible diaphragm. The bearing sleeve 15 within the handle comprises another unit. The tubular flanged connecting element 6 comprises another unit. The washer 5 and the clamping band 17 are two other units which make a total of five distinct units.

All of these units, when assembled in operative relation, constitute an attachment to seal a switch against the entrance of water or any other fluids that may be present in the atmosphere ambient about the switch.

Inasmuch as the securing means for the attachment is located solely within the shield it is essential that the shield be made of a plurality of separate individual units which can be readily assembled and secured together in operative relation.

In making the assembly no additional screws, nuts or bolts are needed, since it is merely necessary to use the screw threaded stem of the switch

and its screw threaded nuts to secure the water proofing attachment in place on the switch.

This protecting shield has a field of application under conditions where it is necessary to protect toggle switches and like electrical equipment from the entrance of water or other liquids into the equipment and thereby protecting such equipment for efficient operation.

The shield is especially useful in boats, vessels, planes, landing craft, etc.

It will now be clearly understood that we have produced a novel and unique attachment for electrical equipment, such as electric switches which have, at least, one screw threaded nut for holding the electrical equipment or electrical switch in place when installed.

Our invention not only constitutes a novel attachment, but when installed, on electrical equipment, such as a switch, constitutes a new combination of switch and waterproofing attachment therefor.

Having fully disclosed our said invention in its preferred embodiment, what we claim is:

1. A toggle switch having a screw threaded stem and having screw threaded nuts on said stem, a switch handle oscillatably mounted in said stem and having its free end extending away from said switch beyond said screw threaded stem whereby said switch may be operated; in combination with an imperforate insulating waterproofing shield attachment secured over said handle and on said stem by said screw threaded nuts, a portion of said attachment comprising a tubular portion having a closed end, said tubular portion slidably receiving said switch handle, one of said nuts being located wholly within said waterproofing shield attachment whereby the switch, the switch handle the nut and stem are completely shielded against the entrance of water or other fluids ambient about the switch.

2. A toggle switch having a screw threaded stem and screw threaded nuts on said stem, a switch handle oscillatably mounted on said stem and having its free end extending away from said switch and beyond said stem whereby said switch may be operated; in combination with a multiple part insulating waterproofing shield attachment, said attachment comprising a yieldable washer and a flanged rigid tubular connecting element disposed about said screw threaded stem and secured in position by said screw threaded nuts, a tubular shielding part comprising a flexible diaphragm an imperforate skirt and a flexible tubular handle engaging portion said skirt and said tubular handle extending in opposite directions from said diaphragm and integrally connected thereto, said tubular handle engaging portion receiving slidably said switch handle said tubular handle having one closed end and said skirt engaging resiliently and tightly over the free flanged end of said rigid tubular connecting element in further combination with a resilient clamping ring clamping said skirt securely about the free flanged end of said rigid tubular connecting element.

3. A toggle switch waterproofing shield attachment, said attachment comprising a plurality of parts including a yieldable sealing washer, a rigid tubular connecting element having an inturned flange at one of its ends and an out turned flange at its opposite end, said tubular connecting element being surmounted on said yieldable sealing washer, means within said tubular connecting element to fasten or secure said tubular

connecting element and washer upon said toggle switch, and another shield attachment part for slidably receiving and shielding said toggle switch handle said last named part having a flexible diaphragm thereon and integral therewith said diaphragm having a skirt extending therefrom, said skirt integral therewith and embracing said tubular connecting element and its out turned flange and secured thereon by a clamping ring, said diaphragm and skirt being imperforate thereby preventing leakage of fluid therethrough.

4. A toggle switch having a waterproofing attachment secured thereon in a waterproof fashion by suitable fastening means, said attachment comprising a flexible diaphragm having a tubular handle receiving portion and a skirt portion, both of said portions extending in opposite directions from said diaphragm said tubular handle having a closed end, said attachment further comprising a yieldable sealing washer and a flanged rigid tubular connecting element surmounted on said washer, said skirt embracing said rigid tubular connecting element and disposed against said washer in sealing contact therewith, a resilient clamp arranged about said skirt to assist in maintaining said skirt on said rigid tubular connecting element and preserve sealing contact of said skirt and washer, said suitable fastening means being located wholly within said rigid tubular connecting element, whereby a portion of said switch and its handle and the suitable fastening means are housed within said attachment and shielded against contact with any fluid ambient about said switch said tubular handle, diaphragm and skirt constituting an integral imperforate structure thereby effectively protecting and insulating the switch.

5. An article of manufacture comprising a sub-structural part of a waterproofing and insulating attachment for a toggle switch or like electrical equipment said part comprising an imperforate flexible shield, said shield having a diaphragm, said diaphragm having a tubular handle projecting therefrom in one direction and a skirt portion extending therefrom in the opposite direction, said handle having a closed end said skirt having a shallow circumferential groove in its outer portion, said groove being located adjacent the free edge of said skirt whereby the skirt may be forced by a clamping ring into sealing contact with a yieldable sealing washer adapted to be associated therewith.

6. The article of manufacture set forth in claim 5 in which the tubular handle is provided with a comparatively rigid bearing sleeve located within and embraced by said tubular handle.

7. The construction set forth in claim 2 in which the tubular handle is provided with a comparatively rigid tubular insert comprising a bearing located within said handle and embraced by the same to form a slidable bearing to engage the switch handle.

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