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ELECTRICAL INTERLOCK SWITCH

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This invention relates to a new and useful electrical interlock switch.

An object of this invention is to simplify and improve interlock switches generally.

Another object of this invention is to provide a means of electrically interlocking a control circuit of high voltage or alarm system with a door, window or other manually operated means to provide safety or to give an alarm to a person working in or near a danger zone.

The principal use of a switch of this invention is in the interlocking of an electrical control system of radio transmitters and receivers to throw off or disconnect high voltage in case a door or window is opened while the set is in operation.

A feature of this invention is the use of a mercury vacuum switch in connection with a pivoted lever which interlocks with a fixed catch or push rod operated manually by a handle used for locking a door or window.

This invention will best be understood by referring to the accompanying drawing, in which:

Fig. 1 is a front elevation of the switch of this invention with the cover removed;

Fig. 2 is a section of Fig. 1 with the switch shown in the "open" or "off" position;

Fig. 3 is another section of Fig. 1 with the switch shown in the "closed" or "on" position.

Referring now in detail to the drawing, a vacuum mercury switch 1 having two contacts 1a and mercury pool 1b is fastened to a lever 2, the arms of which form an acute angle. Switch 1 is secured to the upper arm of lever 2 by means of two straps 3. The lower end of the vertical arm of lever 2 is provided with an engaging member 2a having an aperture therein and is secured to member 2 by means of two screws 2b. The push bolt or operating pin 4 connects to an operating handle (not shown) and is arranged on the fixed portion of a transmitter or similar device so that it may enter an aperture in the fixed plate member 4a, the latter aperture being placed in a position opposite the aperture in member 2a. The forward end of push bolt 4 is provided with an engaging slot 12 and the upper left hand corner is cut away at 13 to actuate lever 2. By movement of bolt 4, lever 2 is caused to rotate around a pin or pivot point 5 which passes through a bearing block 6 secured to plate 4a by means of screws 6a. The entire assembly is enclosed by means of metallic casing 7 having an aperture 7a over which is fastened an insulating plate 10 for securing terminal screws 9, which is provided with washers 9a and nuts 9b. Insulated flexible leads 8 connect contacts 1a with terminal screws 9, the

terminal members being protected with a shield 11 having an aperture 11a which permits entry of a pair of external circuit leads (not shown).

It will be noted in Fig. 2 that the position of the switch 1 as shown is such that mercury pool 1b cannot make connection to terminals 1a, as they are located at the far end or to the right of the switch. In Fig. 3, the push bolt 4 is shown in its extreme operating position and the mercury switch is located so the pool 1b now makes contact to and thus shorts across terminals 1a to complete the electrical circuit. It will also be noted that the engaging means 12 in rod 4 completely surrounds the lower portion of member 2a so that when the operating handle is moved to the right, lever 2 is drawn back to its original position shown in Fig. 2 and thus places the switch again in the "off" position.

Some of the advantages of this type of switch are that by the use of a mercury type vacuum switch to complete the electrical circuit contacts, dirty contacts are avoided. Also, a positive action is given which is less troublesome for completing the circuit. It removes the danger of personal contact by keeping the live contacts away from the door openings, thereby avoiding an electrical shock hazard should a tool or other metal instrument be pushed into the hole for actuating the push pin or bolt 4. Another advantage of this type of switch is that it is positive acting for the reason that bolt 4 interlocks with lever 2 when the switch is in the "on" position, making it impossible to remove the pin or bolt without returning the switch to the "off" position. The hole for pin or bolt 4 may be guided by any suitable means (not shown). Also, the switch may be arranged on a movable door or placed on the fixed portion of the door frame and actuated by the door locking device or lever.

Although only one embodiment of this invention is shown, it is to be distinctly understood that it is not to be limited precisely thereto.

What is claimed is:

1. An electrical interlock switch for an enclosing member of a radio transmitter having a door therein, a push bolt for latching said door, a metallic casing member secured to said enclosing member adjacent said door, a plurality of apertures in said metallic casing, a movable lever forming an acute angle with its two arms, said lever having electrical contact means on one of said arms and an aperture on the end of its other arm, said push bolt arranged to pass through one of the apertures in said casing member to engage the aperture in the last mentioned

arm of said lever to actuate the lever to connect and disconnect said electrical contact means, an insulating member covering another aperture in said metallic casing, and a pair of terminals mounted on said insulating member outside of said casing and connected to said contact means by a pair of flexible leads located within said casing.

2. An electrical interlock switch comprising a metallic casing having apertures therein, a pivoted lever having electrical contact means, said lever being pivotally secured within said casing, a movable member having an actuating end and

an engaging slot, said movable member being located external of said casing and arranged to pass through one of the apertures in said casing with means located thereon to actuate said lever to said contact means by a pair of flexible leads, an insulating member covering the other aperture, and a metallic shield covering said pair of terminals mounted outside of said casing and connected to connect said electrical contact means, an insulating member and a pair of terminals mounted on said insulating member, said shield having an aperture therein to permit entry of external leads.

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