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QUICK ACTING POSITIVE CONTACT SWITCH

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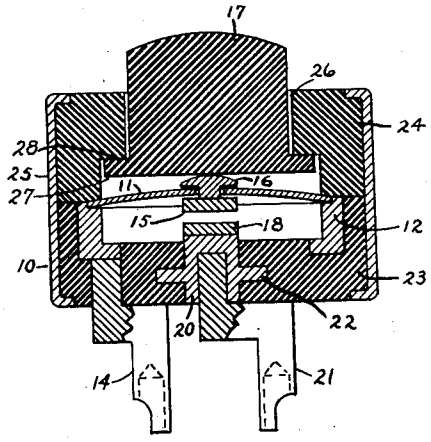


FIG. 1

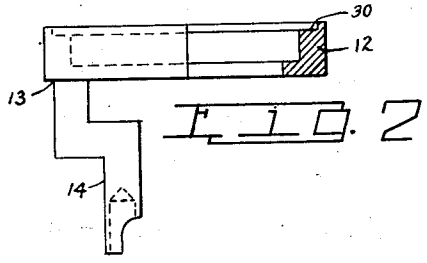


FIG. 2

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QUICK ACTING POSITIVE CONTACT SWITCH

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4 Claims. (Cl. 200—159)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757)

This invention relates to a quick acting positive contact switch, and has for an object to provide a reliable positive quick acting contact switch for use in the electrical circuits of armament and other equipment on airplanes or elsewhere.

A further object of this invention is to provide a snap action switch for instantaneously making and breaking a circuit, thereby preventing delayed action in armament equipment, as in the release of bombs or the firing of guns.

A further object of this invention is to provide a quick action switch which may be located conveniently, such as on the end of the joy stick of a single place airplane.

A still further object of this invention is to provide a switch of simple construction and free from defective parts or parts liable to become defective in use, one sample switch of this invention having already been tested for 50,000 operations without any noticeable sign of deterioration or wear.

With the foregoing and other objects in view, the invention consists in the construction, combination and arrangement of parts hereinafter described and illustrated in the drawing, in which:

Fig. 1 is a sectional view through the switch of this invention; and

Fig. 2 is a partly sectional and partly elevational view of the grounding flanged ring and its attached contact.

There is shown at 10 the contact switch of this invention which includes a snap action concavo-convex disc 11 constructed of bronze or other resilient metal, and has its peripheral edge supported on a grounding flanged ring 12 to which is secured, as by silver solder 13, one of the contact poles 14. A tungsten contact point 15 is fastened to the disc 11 by means of a rivet 16 for making contact, when depressed by a finger button 17 of insulating material, with the tungsten contact point 18 integrally mounted on a metal sleeve 20 secured on the other contact pole 21. This sleeve 20 has a projecting flange 22 for more securely anchoring it within the molded lower housing portion 23, in which is also secured the grounding flanged ring 12 and its attached contact pole 14. The upper molded housing portion 24 is secured to the lower housing portion 23 by means of a pressed metal casting 25 thereabouts, the upper housing portion 24 having a counterbored opening 26 through which the finger button 17 extends, the finger button 17 being provided with a flanged base 27 held against the counterbored shoulder 28 by the pressure of the contact disc 11 and its rivet 16.

In operation, the electrical conductors of the desired circuit are suitably connected to the contact poles 14 and 21. Switch 10 may be conveniently located in any suitable place. If on an air plane, it may be on the end of the joy stick. If on an automobile or truck or other vehicle, it may be on the end of the gear shift lever. The contact disc 11 normally holds the tungsten contact point 15 out of contact with the tungsten contact point 18. Pressing the finger button 17 downwardly causes the base of this button to press against the top of rivet 16 and then the contact disc 11 yields with a snap action, permitting a quick and positive contact of the tungsten contact point 15 with the tungsten contact point 18, thereby completing the circuit from the contact pole 14 through the grounding flanged ring 12, disc 11, the tungsten contact points 15 and 18, the sleeve 20 and the contact pole 21. These tungsten contact points 15 and 18 are normally held one-sixteenth of an inch apart, sufficient to interrupt the circuit yet short enough to make practically an instantaneous completion of the circuit when the finger button 17 is depressed.

As shown in Fig. 2, it will be observed that the grounding flanged ring 12 has a recessed surface 30 on which the peripheral edge of the disc 11 rests and over which it moves with a wiping motion as the finger button 17 is depressed, thereby assuring a certain and clean connection between the disc 11 and the ring 12.

Other modifications and changes in the number and arrangements of the parts may be made by those skilled in the art without departing from the nature of the invention, within the scope of what is hereinafter claimed.

The invention described herein may be manufactured and/or used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. A quick acting push button positive contact switch comprising a concavo-convex disc, a flanged ring on which said concavo-convex disc rests, the peripheral edge of said disc being in wiping, self-cleaning contact with said ring, a contact point secured to the center of the concave side of said disc, push button means for depressing said disc to cause it to snap, a second contact point spaced from said first con-

tact point within the path of movement of said first contact point as it is moved by the snap action of said disc, and a contact pole member to which said second contact point is connected.

2. A quick acting push button contact switch comprising a concavo-convex disc, a flanged ring on which said concavo-convex disc rests, a contact point secured to the center of the concave side of said disc, push button means for depressing said disc to cause it to snap, a second contact point spaced from said first contact point within the path of movement of said first contact point as it is moved by the snap action of said disc, a contact pole member to which said second contact point is connected, a second contact pole member connected to said flanged ring, and an insulating housing molded about said contact pole members and said flanged ring portion securing them in proper spaced relation.

3. A quick acting push button positive contact switch comprising a concavo-convex disc, a flanged ring on which said concavo-convex disc rests, a contact point secured to the center of the concave side of said disc, push button means for depressing said disc to cause it to snap, a second contact point spaced from said first contact point within the path of movement of said first contact point as it is moved by the snap action of said disc, a contact pole member to which said second contact point is connected, a second contact pole member connected to said flanged ring, and an insulating housing molded about said contact pole members and said flanged ring portion securing them in proper spaced relation, the peripheral edge of said concavo-convex disc resting in a recessed surface of said flanged ring, thereby providing a self-cleaning contact between said disc and said flanged ring.

4. A quick acting push button positive contact switch comprising a concavo-convex disc, a flanged ring on which said concavo-convex disc rests, a contact point secured to the center of the concave side of said disc, push button means for depressing said disc to cause it to snap, a second contact point spaced from said first contact point within the path of movement of said first contact point as it is moved by the snap action of said disc, a contact pole member to which said second contact point is connected, a second contact pole member connected to said flanged ring, an insulating housing portion molded about said contact pole members and said flanged ring portion securing them in proper spaced relation, a second insulating housing portion, said second portion being counterbored, said disc depressing push button means comprising a flanged finger button extending through said counterbored housing portion, and a pressed metal casing securing said housing portions into a unitary structure.

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