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TOGGLE SWITCH LOCKING DEVICE

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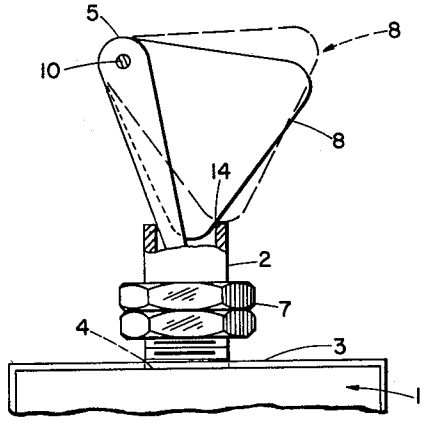


FIG. 1

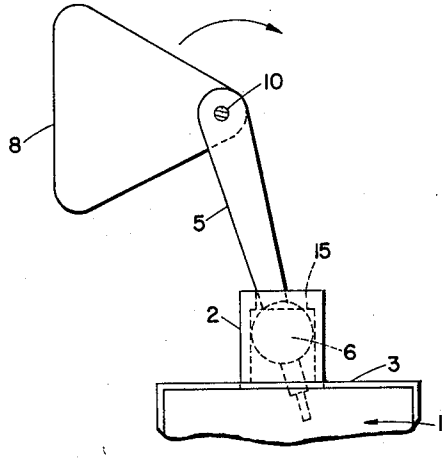


FIG. 2

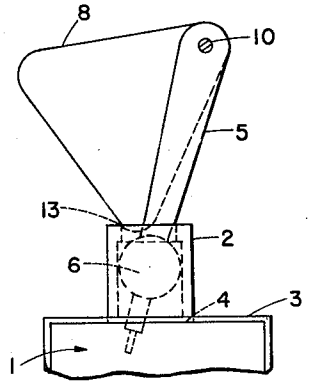


FIG. 5

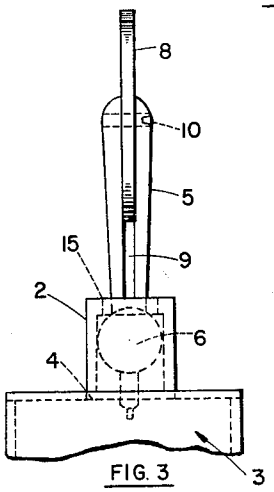


FIG. 3

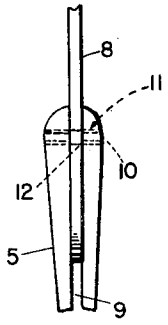


FIG. 4

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TOGGLE SWITCH LOCKING DEVICE

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This invention relates in general to locking devices, and more particularly to a toggle switch wherein the switch handle is retained in its desired position.

During operation of electrical, mechanical and electromechanical equipment, it is usually imperative that control switch handles remain in their selected positions until deliberately changed by the operator. Accidental or inadvertent movement of a switch handle to an undesired position could adversely effect critical operating conditions. Locking devices are, therefore, generally used to retain a switch handle in a desired position until the locking device is released. Locking devices generally comprise several parts, such as springs, fasteners, switch handle guide plates featuring irregularly shaped slots and in some cases, switch handle cover plates.

My invention is simpler in design than present locking devices. By reducing the number of working parts I have provided a locking device with increased reliability, rapidity and ease of operation.

The primary object of this invention is to retain the switch handle of a multi-position toggle switch in a predetermined position to avert inadvertent or accidental movement.

Another object of this invention is to incorporate a locking device into the switch handle of a multi-position toggle switch.

A further object of the present invention is to provide a locking device for constraining the switch handle of an electric multi-position toggle switch in any of its extreme positions.

Another object of this invention is to provide a locking device that must be manually released by the operator to permit unrestricted movement of the switch handle.

Another object of the present invention is to provide a reliable toggle switch locking device of simple and economical construction.

A further object is to provide a locking device which may be attached as a unit to an otherwise complete toggle switch assembly.

An additional object is to utilize the usual switch mounting means to obstruct the movement of the switch handle when the locking device is in contact with the mounting means.

Other objects and a more complete understanding of my invention may be had by referring to the following description and claims taken in conjunction with the accompanying drawing, in which:

FIG. 1 is a front elevational view illustrating the locking device of my invention in assembled relationship with a toggle switch and retaining the switch handle in one of its extreme positions;

FIG. 2 is an elevational view showing the locking device in an open position;

FIG. 3 is a side elevational view representing the locking device in an open position and in a plane coextensive with the plane of the switch handle;

FIG. 4 is an enlarged detail of the end portion of the toggle switch handle as illustrated in FIG. 3;

FIG. 5 is a front elevational view illustrating the locking device retaining the switch handle in the opposite extreme position from that shown in FIGURE 1.

In my invention, a retaining member is pivotally connected to the external portion of a toggle switch handle and an abutment is provided on the body portion of the switch assembly. Movement of the switch handle is prevented by rotation of the retaining member into contact with the abutment which locks the switch handle. In this manner the essential elements of my locking device cooperate to retain a switch handle in its selected position.

Referring to the drawings, a particular embodiment of the present invention is shown incorporated in a conventional electric multi-position toggle switch. Generally, such a switch assembly has a switch box **1**, which contains the components for making and breaking an electrical circuit. A cover plate **3**, containing a centrally located aperture **4**, has a hollow, externally threaded stud **2**, mounted thereon. The inner peripheral surface of stud **2** is in direct alignment with the aperture of the cover plate. A switch handle **5** is pivotally mounted by a ball and socket arrangement **6** (FIG. 2) within the stud such that one end of the switch handle projects externally from the assembly and the opposite end actuates the electrical contacts within the switch box **1**. The switch assembly is fastened to its desired location by means of two nuts **7**, threadably mounted on the stud **2**.

The locking device of the present invention includes a thin, equilateral triangularly shaped retaining member **8**, and a slot **9** (FIG. 3) longitudinally bisecting the switch handle **5**, from its outer extremity to the ball **6**. The sidewalls of slot **9** are in a plane parallel to the plane of motion of switch handle **5** and will receive member **8** in its locking position. Retaining member **8** is pivotally mounted at the end of switch handle **5** by machine screw fastening means **10**, which passes through a tapped hole **11** in switch handle **5**, and through a drilled hole **12** in a vertex of retaining member **8**. Retaining member **8** travels in a plane coextensive with the plane of motion of switch handle **5** and partially projects into slot **9** when retaining member **8** is constraining switch handle **5** to a selected position, as indicated in FIGS. 1 and 5. The stud **2** functions as an abutment to buttress and render immobile retaining member **8** when stud **2** and retaining member **8** are in contact. Switch handle **5** is locked in either position shown in FIGS. 1 and 5 when retaining member **8** is in fixed contact with the inner peripheral edge **15** of stud **2** at either **13** or **14**. The switch handle **5** is unlocked by manually rotating retaining member **8** out of contact with stud **2**, as illustrated in FIG. 2.

Although I have described my invention with respect to a particular embodiment, it is only by way of example and numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

I claim as my invention:

1. A locking arrangement for a switch box assembly having an externally projecting switch handle for actuation between respective make and break switch contact positions in the switch box, the locking arrangement comprising:

(*a*) a longitudinal bisecting slot in the switch handle and oriented in the plane of travel of the handle,

(*b*) a rigid retaining member having a plurality of vertices, and

(*c*) said retaining member pivotally connected at a first vertex to the external end of the switch handle for rotation about said first vertex partially into and out of said handle slot, the rotation of said retaining member adapted to bring respective ones of a second and third vertex of said member into contact with the switch box assembly so that the switch handle is locked in an associated make or break switch position.

2. A locking arrangement for a switch box assembly having an externally projecting switch handle pivotally connected to the switch box for actuation between respective make and break switch contact positions in the switch box, the locking arrangement comprising:

(*a*) a longitudinal bisecting slot suitably formed in the switch handle and oriented in the plane of travel of the pivotally connected handle,

(*b*) a generally triangular rigid retaining member pivoted at a first vertex of said member to the external end of the switch handle, and

(*c*) said triangular member adapted to rotate about said first vertex partially into and out of said handle slot, the rotation of said triangular member adapted to bring respective ones of a second and third vertex of said member into contact with the switch box assembly so that the switch handle is locked in an associated make or break switch position.

3. The locking arrangement of claim 2 in which said triangular retaining member is a plate having equilateral sides.

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