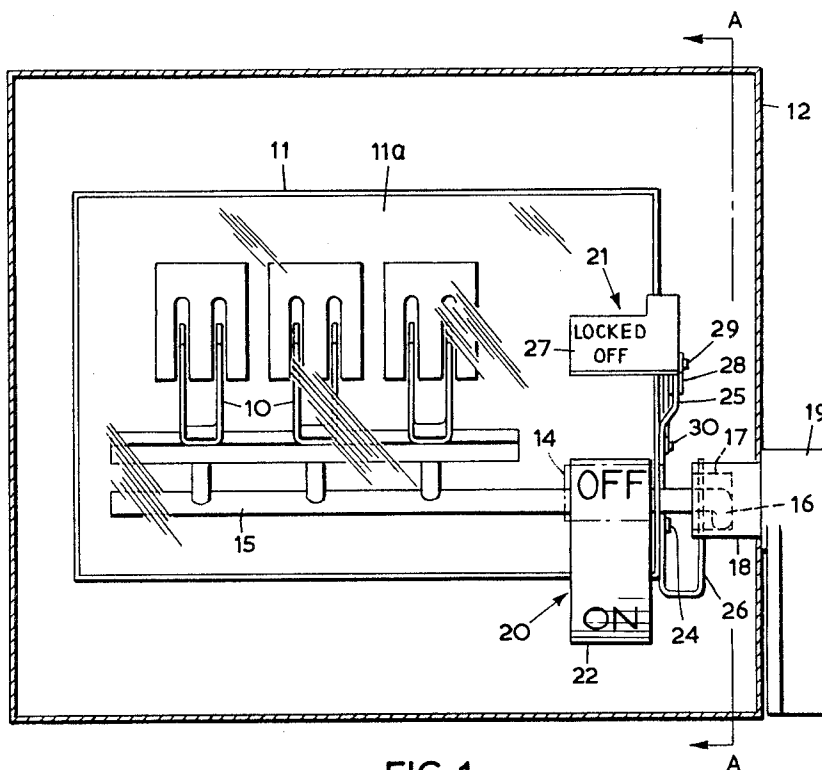


3,227,831

2 Sheets-Sheet 1



Inventors:
Eric Jacks
Charles Rowe
B. J. Stevens, Davis, Thellert Mosher
Attorneys

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E. JACKS ET AL

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ELECTRICAL SWITCH LOCKABLE IN ONE POSITION

Filed June 19, 1963

2 Sheets-Sheet 2

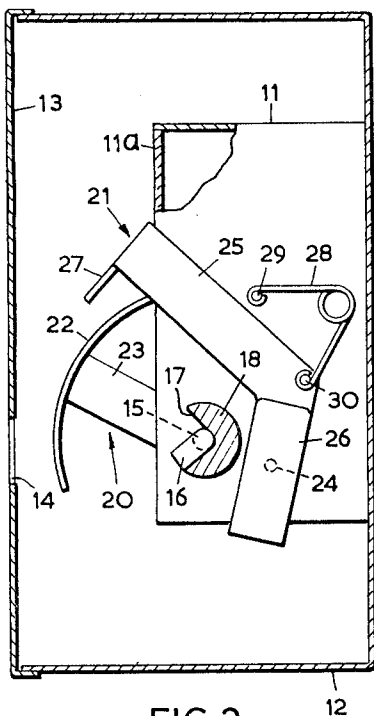


FIG. 2

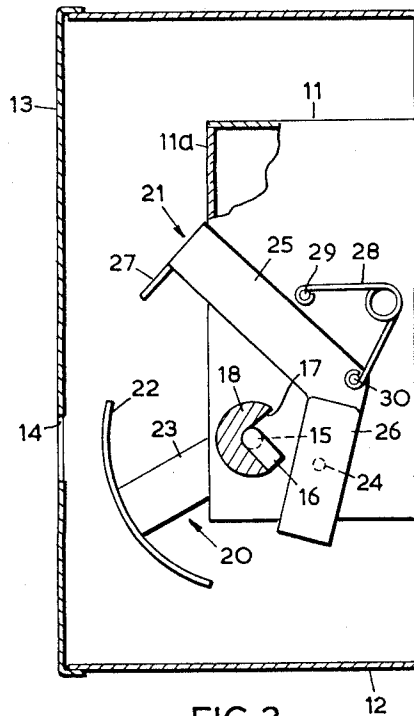


FIG. 3

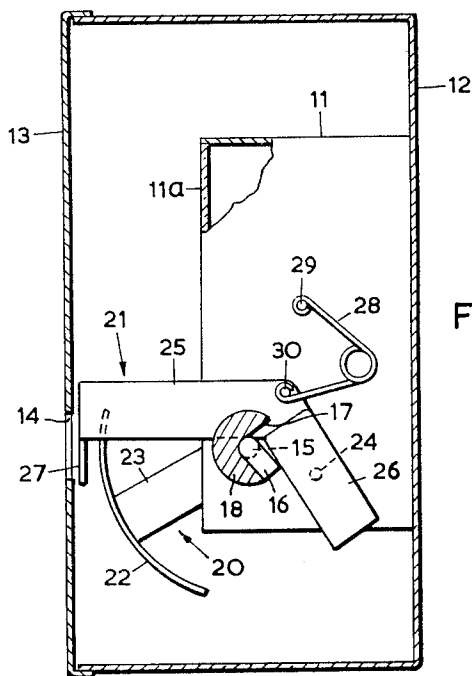


FIG. 4

Inventors:
Eric Jacks
Charles Rowe

By: Stevens, Davis, Miller & Mosher
Attorneys

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ELECTRICAL SWITCH LOCKABLE IN ONE POSITION

Eric Jacks and Charles Rowe, Liverpool, England, assignors to The English Electric Company Limited, London, England, a British company

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Claims priority, application Great Britain, June 22, 1962, 24,048/62

3 Claims. (Cl. 200—50)

This invention relates to electrical switches and concerns arrangements for locking the switch in the OFF position and for indicating whether the switch is in the ON, OFF or LOCKED OFF conditions.

According to the invention, an electrical switch assembly includes a chassis, a fixed contact assembly, a movable contact assembly, an ON/OFF indicator coupled to said movable contact assembly for providing visual indication when the switch is in both an ON and an OFF position, a LOCKED OFF indicator pivotally mounted on said chassis, and interlock means on the movable contact assembly, said interlock means permitting the LOCKED OFF indicator to move when the switch is in the OFF position to a position in which the LOCKED OFF indicator co-operates with the interlock means so as to lock the ON/OFF indicator against movement to the ON position, said LOCKED OFF indicator when in said locking position providing visual indication that the switch is LOCKED OFF.

Further preferred features of the invention will appear from the following description with reference to the accompanying drawings, wherein:

FIG. 1 is a sectional front elevation showing an electrical switch in accordance with the present invention, and FIGS. 2, 3, and 4 are sectional end elevations on the line A—A in FIG. 1 showing various positions of the operation of the switch.

Referring now to FIGS. 1-2, the switch comprises a moving contact assembly 10 housed in a chassis 11 having a cover 11a of transparent material. The chassis 11 is disposed in a case 12 having a door 13 (omitted from FIG. 1 for clarity) provided with an indicator viewing window 14.

The moving contact assembly 10 includes an operating shaft 15 which extends beyond the chassis 11, terminating in a lug portion 16 which makes a right angle with the axis of the shaft 15. The lug 16 engages in a recess 17 formed in a boss 18 of an operating handle 19 disposed outside the case 12 so that rotation of the handle 19 causes the operating shaft 15 to rotate.

The switch is provided with an ON/OFF indicator generally indicated at 20 and a LOCKED OFF indicator generally indicated at 21. The indicator 20 comprises an arcuate strip 22 carried by an arm 23 which is secured to the operating shaft 15. The arcuate strip 22 bears the legends OFF and ON at the end thereof, and it is arranged that these legends are directly adjacent the window 14 in the door 13 when the switch is in the corresponding positions.

The LOCKED OFF indicator 21 is mounted on a pivot 24 secured to one end of the chassis 11 and comprises a generally U-shaped member having limbs 25 and 26 of unequal length. The limbs 25 and 26 form an obtuse angle with each other and the longer limb 25 carries at its free end a plate 27 bearing the legend LOCKED OFF.

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The shorter limb 26 is disposed adjacent to the recess 17 in the boss 18. The plate 27 comes between the arcuate strip 22 and the window 14 when the indicator 21 is rotated so as to over-ride the OFF indication.

The coiled torsion spring 28 has one end 29 secured to the chassis 11 and the other end 30 secured to the limb 25.

When the indicator 20 is in the OFF position (FIG. 3) and the door 13 has been opened, the indicator 21 may be rotated anti-clockwise to the locking position shown in FIG. 4 in which the LOCKED OFF legend on the plate 27 is seen through the window 14. This rotation is permitted because the recess 17 in the boss 18 accommodates the shorter limb 26 and locking of the switch is produced because attempted movement of the indicator 20 to the ON position would cause a face of the recess 17 to engage the limb 26 at a position in alignment with the pivot 24.

It will be apparent that when the switch is in the ON position, as shown in FIG. 2, it will not be possible to move the indicator 21 to give the LOCKED OFF indication owing to engagement of the limb 26 with the curved outer face of the boss 18.

The coiled torsion spring 28 maintains the LOCKED OFF indicator 21 at either of two extremes of its travel. The toggle point of the spring is arranged to be between the LOCKED OFF position of the indicator 21 (FIG. 4) and the point at which the indicator 21 engages the handle boss 18 when the indicator 20 is in the ON position. This ensures that the LOCKED OFF indicator cannot be left in a position intermediate between the two extremes of its travel, and in particular it will not remain in contact with the curved outer face of the handle boss 18.

What we claim as our invention and desire to secure by Letters Patent is:

1. An electrical switch including a switch case in the form of an open-sided box, an openable access door for the open side of the box, a pair of contact members mounted in the box and relatively movable between a position in which the switch is in an OFF state and a position in which the switch is in an ON state, an operating member situated externally of the box and connected to at least one of the contact members and manually movable so as to relatively move the contact members between the two said positions, first indicating means visible from a position outside the box for indicating when the switch is in the ON state and when the switch is in the OFF state, interlock means situated inside the box and controlled by the operating member so as to assume a first position when the switch is in the ON state and a second position when the switch is in the OFF state, a locking member situated inside the box so as to be accessible only through the open side of the box when the door is open and movable between a free position and a locking position, the locking member being manually movable into the locking position only when the interlock means is in the said second position so as to then co-operate with the interlock means to lock the switch in the OFF state, the switch then remaining locked in the OFF state until the locking member is moved to the free position, and second indicating means visible from a position outside the box for indicating when the switch is locked in the OFF state.

2. An electrical switch according to claim 1 in which the interlock means includes a cam member arranged to

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be rotated by movement of the operating member, and in which the locking member has an abutment portion arranged in juxtaposition with the cam member so that when the switch is in the ON state the abutment portion co-operates with the cam member to prevent movement of the locking member into the locking position, the cam member being rotated into such a position when the switch is in the OFF state that the said abutment portion no longer prevents the locking member from moving into the locking position.

3. An electrical switch according to claim 2, in which the said access door has a transparent window, the first indicating means comprises a first indicator flag bearing suitable legends and coupled to the operating member so as to present the appropriate legend adjacent to the window, and the second indicating means comprises a

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second indicator flag bearing a suitable legend and coupled to the locking member so as to interpose the legend between the first indicator flag and the window when the locking member is in the locking position.

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KATHLEEN H. CLAFFY, *Primary Examiner*.

15 BERNARD A. GILHEANY, *Examiner*.