United States Patent

Puerner

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[54] TWO SWITCH ACTUATOR MEANS

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[52] **U.S. Cl.** .....**200/172 A,** 200/153 LA

[51] **Int. Cl.** **H01h 3/04**

[58] **Field of Search**.....200/153 LA, 153 K, 153 N, 50 C, 200/172 A, 16 R, 17 R, 18 R; 74/99 R

[56] **References Cited**

UNITED STATES PATENTS

3,187,120	6/1965	Akst	200/17 R X
2,319,593	5/1943	Fisher	200/16 R

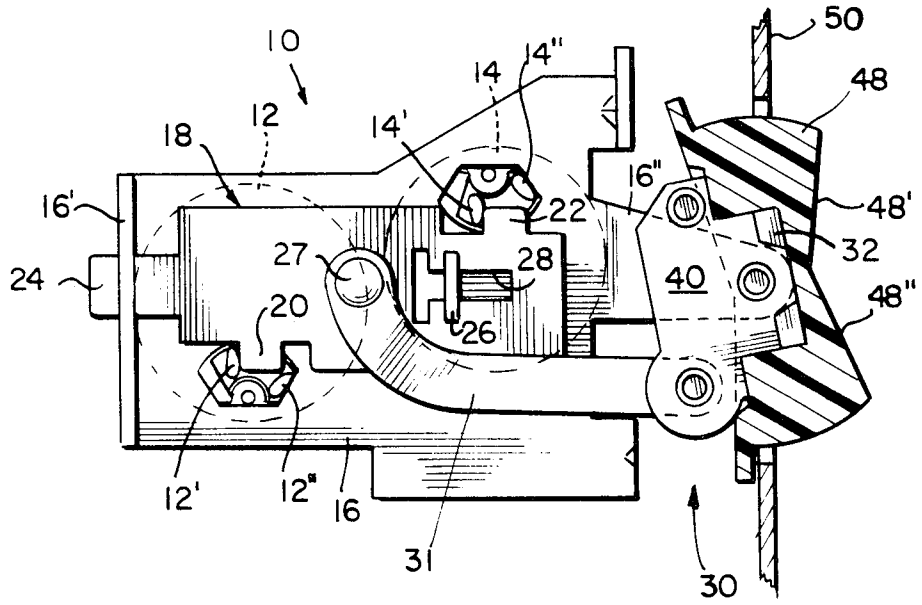
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[57] **ABSTRACT**

A pivotal actuator means having two pivot means is used to substantially simultaneously actuate two switches.

8 Claims, 4 Drawing Figures



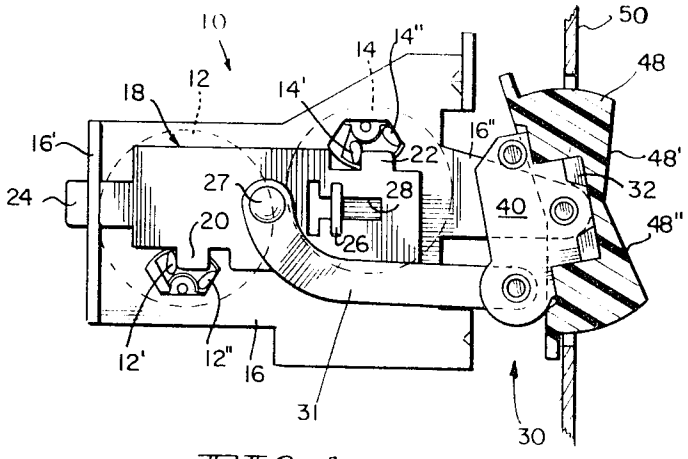


FIG. 1

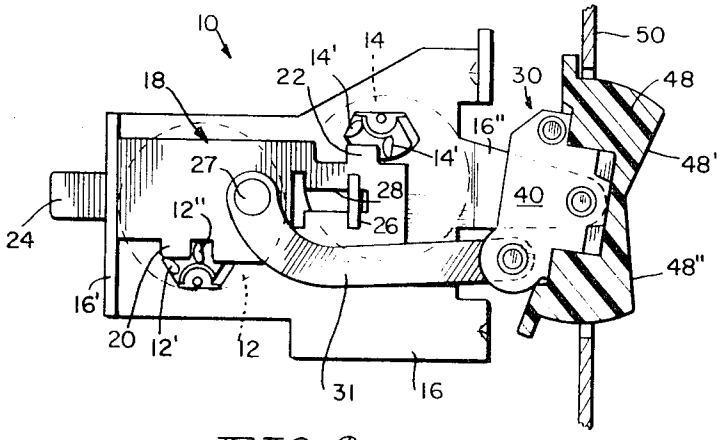


FIG. 2

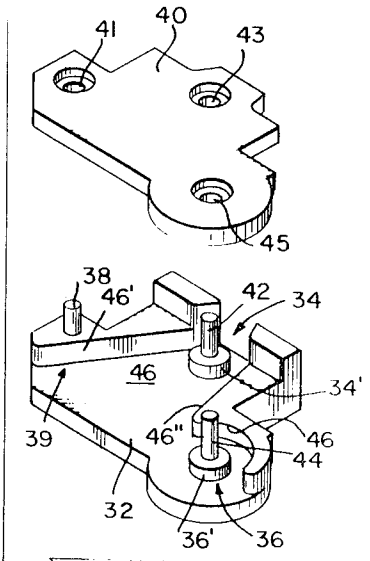


FIG. 3

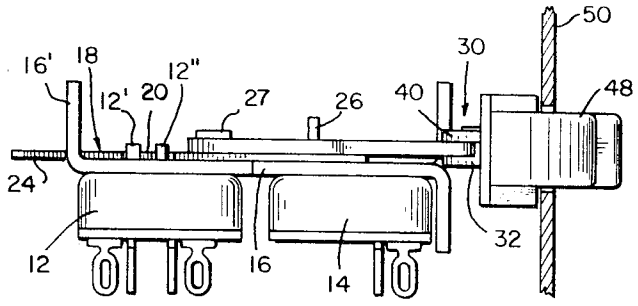


FIG. 4

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TWO SWITCH ACTUATOR MEANS

This invention relates to electrical control switches; more particularly, it relates to an actuator means for substantially simultaneously operating a pair of rotary switches.

In the television industry there is a need for providing a pair of switches which cooperate with one another such that when one is switched to an "off" position, the other is substantially simultaneously switched to an "on" position. For example, it may be desirable to keep the filaments of a television warm even after the television has been turned off. This can best be accomplished by providing a pair of switches with a common switch actuator means, such that when one switch is turned off the other is automatically turned on.

The present invention is concerned with a control means and has as one of its objects the provision of a pair of rotary switch means which can be selectively and simultaneously turned on and off.

Another object of the invention is to provide an actuator means which can substantially simultaneously actuate a pair of rotary switches.

A further object of the invention is to provide an actuator means which can substantially simultaneously actuate a pair of rotary switches which includes two pivot means.

Yet another object of the invention is to provide in a control means having a pair of switch means a slide means engaging each of the switches, a pivotal actuator means having two pivot means, and means connecting one of the pivot means to the slide means.

Another object of the invention is to provide an actuator means for substantially simultaneously actuating a pair of rotary switches wherein the actuator means has two pivot means with at least the pivot means being constructed from a wear resistant, self-lubricating plastic.

Yet still another object of the invention is the provision of an actuator means for substantially simultaneously actuating a pair of rotary switches wherein the actuator means has two pivot means with at least the pivot means being constructed of nylon impregnated with molybdenum disulfide.

Yet another object of the invention is to provide an actuator means for substantially simultaneously actuating a pair of rotary switches which has two pivot means, one of which is stationary and the other movable.

Still another object of the invention is to provide an actuator means which substantially simultaneously operates a pair of rotary switches which includes stop means limiting the actuator's travel.

These and other objects of the invention will become apparent from the following description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a bottom view in partial cross-section showing a control means having two rotary switches and the actuator means used to actuate the switches;

FIG. 2 is a view similar to FIG. 1 showing the actuator means and the switches in different positions;

FIG. 3 is an exploded view of the actuator means of the present invention; and

FIG. 4 is a side elevation showing the control means.

Generally speaking, the objects of the invention are accomplished by providing in a control means wherein two switch means are actuated substantially simultaneously, a switch actuator means including a slide means engaging each of the switch means, a pivotal actuator means having two pivot means, and means connecting one of the pivot means to the slide means.

Referring now to the drawings, there is shown a control means **10** having two rotary switch means **12** and **14** carried by base member **16**. Each of the switch means includes pivotally mounted unitarily constructed spaced tangs **12'**, **12''** and **14'**, **14''** which are spring loaded through suitable springs (not shown). Selective, substantially simultaneous pivoting of the tangs will cause actuation of movable contacts (not shown), to selectively engage electrical contacts to complete electrical circuits. Such rotary switches are known in the control device art and are not a critical feature of the present invention, it being understood that various types of switches may be used.

The tangs are pivotally rotated through motion of slider means **18**. Slider means **18** includes a pair of tabs **20** and **22** adapted to engage the tangs of switch means **12** and **14** respectively. Axial alignment and guidance of slide means **18** is achieved through tab **24** which engages an aperture in flange **16'** of base member **16**, and tab **26** which extends through aperture **28** from base member **16**. Aperture **28** is formed in slider means **18**. Slider means **18** is connected to actuator means **30** through connecting rod **31**. Connecting rod **31** is connected to slider means **30** through post **27** which is carried by the slider means.

Actuator means **30** includes a base member **32** carrying two pivot means **34** and **36**, stop means **39**, and a cover or cap **40**. Pivot means **34** is stationary and includes a bushing **34'** surrounding post **42**. Base member **32** with cap **40** pivots about the bushing **34'**. The entire actuator means is carried by support flange **16''** of base member **16**, post **42** extending through an aperture of the flange and into cap **40**. Pivot means **36** is movable and includes a bushing **36'** surrounding post **44**. Pivot means **36** is movable in that the base member **32** and the cap **40** pivot about pivot means **34**. Connecting rod **31** pivots about bushing **36'** between the bushing and shoulder **46** in accordance with the movement of base member **32**. Cap **40** includes apertures **41**, **43**, **45**, through which posts **38**, **42** and **44** extend with the cap being staked to the posts. Support flange **16''** is carried in channel **46** between cap or cover **40**. Channel **46** has side walls **46'** and **46''**. These side walls serve as stop means **39** in that they limit the amount of arcuate or pivotal travel of the pivotal switch actuator means **30**.

A cap **48** provides for manual operation of the actuator means **30**, the cap being snuggly fitted over the actuator means. The control unit **10** is mounted on a suitable support means (not shown), with the cap **48** extending through a panel **50**.

In operation, manual depression of either face **48'** or **48''** of the cap **40** causes actuator means **30** to pivot about bushing **34'** which in turn causes connecting rod **32** to pivot about bushing **36'** which causes slide means **18** to slide back and forth to cause tangs **12'**, **12''** and **14'**, **14''** to be acruately displaced to actuate rotary switch means **12** and **14** respectively. As shown in FIG. 1, face **48'** has been depressed such that tangs **12''** and **14''** are engaged by tabs **20** and **22** to be arcuately displaced. Stop means **38** has limited the arcuate displacement of the actuator means **30**. In FIG. 2, face **48''** has been actuated such that tangs **12'** and **14'** have been engaged by tabs **20** and **22** to be arcuately disposed.

By the device's operation, especially with the switches **12** and **14** being spring loaded, there will be considerable wear on the pivoting actuator means **30**, especially the bearing surfaces of bushings **34'** and **36'**. To this end, the present invention contemplates the use of a highly wear resistant material at least for the pivot means **34** and **36**, especially the bearing surfaces of the bushings. Exceptional results are achieved with a plastic such as nylon impregnated with molybdenum disulfide.

Thus there is described an actuator means having two pivot means adapted to simultaneously actuate a pair of switches.

What is claimed is:

1. In a control means wherein two switch means are actuated substantially simultaneously:

a. slide means engaging each of said switch means,

b. a pivotal actuator means having two pivot means, at least said two pivot means being plastic, and

c. means connecting one of said pivot means to said slide means, the pivoting of said actuator means causing said slide means to actuate said two switch means substantially simultaneously.

2. In a control means according to claim **1** wherein said two pivot means includes a stationary pivot means and a movable pivot means.

3. In a control means according to claim **1** wherein said plastic is nylon impregnated with molybdenum disulfide.

4. In a control means according to claim 1 wherein said pivotal switch actuator means includes a base member, posts extending from said base member, bushings surrounding at least two of said posts, a cover means, apertures in said cover means receiving said posts, said cover means staked to said posts.

5. In a control means according to claim 4 wherein said pivotal switch actuator means further includes stop means carried by said base member limiting the travel of said pivotal switch actuator means.

6. In a control means according to claim 5 wherein said stop means includes a channel provided in said base member, said channel including side walls engaging a support member carrying said pivotal switch actuator means.

7. In a control means according to claim 1 wherein substantially said entire pivoted actuator means is plastic.

8. In a control means according to claim 7 wherein said plastic is nylon impregnated with molybdenum disulfide.

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