Sept. 13, 1955 J. W. CARDEN 2,717,933

DOOR ACTUATED SWITCH

Filed Nov. 9, 1953

Fig. 1

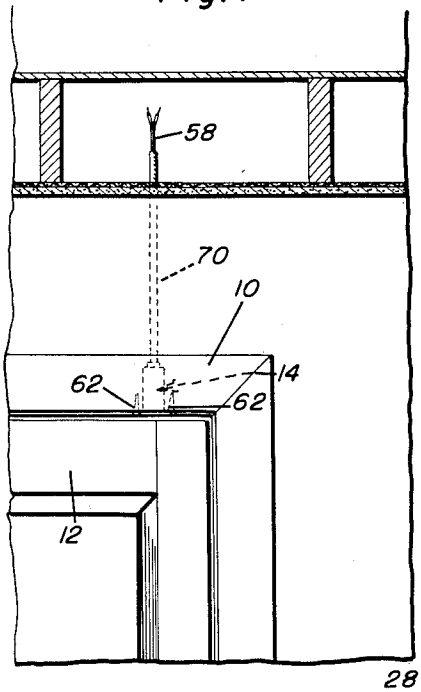


Fig. 5

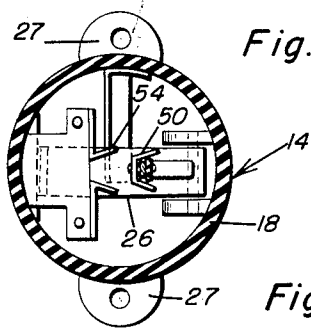


Fig. 3

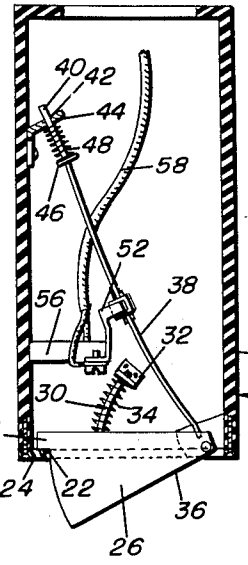


Fig. 4

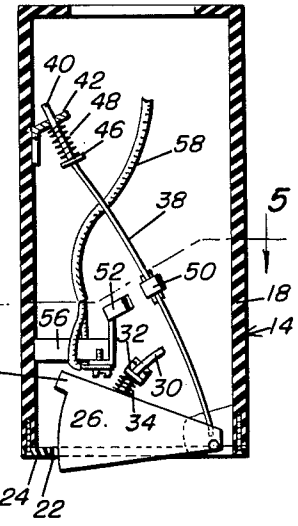
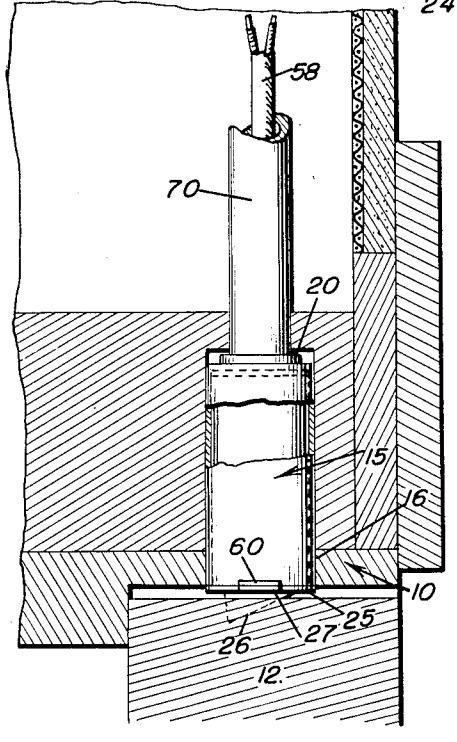


Fig. 2



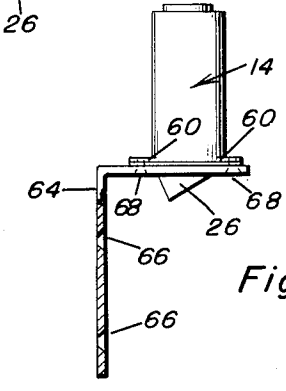


Fig. 6

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DOOR ACTUATED SWITCH

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5 Claims. (Cl. 200—61.82)

This invention relates to a door actuated switch adapted to be installed for use in conjunction with closet doors and the like to complete an operative electrical circuit to an illuminating lamp when the door is opened.

The primary object of this invention resides in the provision of a door actuated switch having snap action means for assuring that an operative electrical circuit will be completed when a door is opened, yet which will properly deactivate the electrical circuits when the switch is closed.

The construction of this invention features a cylindrical casing having a door engageable actuation member pivotally mounted therein, which actuation member is adapted to control the movement of a resilient strip carrying a movable contact member which is adapted to seat between diverging spaced contacts to complete an operative electrical circuit between these contacts.

Still further objects and features of this invention reside in the provision of a door actuated switch that is strong and durable, simple in construction and manufacture, capable of being readily installed without affecting the proper operation of the door, and which switch is sure in action while having a casing constructed from insulative material thereby rendering the device safe to use.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this door actuated switch, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is an elevational view illustrating the manner in which the door switch is installed in a door frame and further illustrating the manner in which a conduit attached to the cylindrical casing of the switch can extend upwardly through the ceiling of the floor next above from whence the electrical conductors can be connected to a suitable outlet or terminal box;

Figure 2 is a sectional detail view of the door frame and associated elements illustrating the manner in which the switch comprising the present invention is installed therein;

Figure 3 is a vertical sectional view of the casing of this door actuated switch showing the device in a circuit closed position with the door open;

Figure 4 is a vertical sectional view similar to that of Figure 3, but illustrating the switch in a circuit open position with the door closed;

Figure 5 is a sectional detail view as taken along the plane of line 5—5 in Figure 4; and

Figure 6 is a sectional detail view illustrating the construction of a bracket which may be utilized in order to adapt this device for use with horizontally sliding doors.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral **10** generally designates a door frame which has a door **12** hingedly secured thereto and adapted to close the opening

in the door frame. The door actuated switch comprising the present invention is generally indicated by reference numeral **14** and is adapted to be detachably secured in a metal housing **15** in a suitable recess, as at **16**, provided in the door frame **10** and in the associated structure.

The switch **14** includes a casing **18** formed from a suitable insulative material, such as any of the readily available synthetic plastic materials, hard rubber, Bakelite, or the like, and may be provided with an internally threaded neck portion **20**. The casing **18** has an opening **22** in the bottom **24** thereof. A plate **25** having an opening therein and having ears **27** within which a wedge-shaped door actuated member **26** is adapted to seat is provided and is detachably secured to the housing **15** for ready access to the interior of the switch. The actuation member **26** has a flange or lip **28** which is adapted to engage the inner upper surface of the bottom wall **24** which limits the outward movement of the actuation member **26**. An arcuate rod **30** is secured to the actuation member **26** and is adapted to extend through a bracket **32** attached to the casing **18**, the bracket **32** being provided with a hole therethrough permitting the arcuate rod **30** to pass freely therethrough. A coil spring **34** coaxial with the rod **30** biases the bracket **32** and the actuation member **26** so that the actuation member **26** is continuously urged outwardly and downwardly from the casing **18**. The wedge-shaped actuation member **26** thus provides a cam surface, as at **36**, adapted to be engaged by the door **12** so as to compress the spring **34** while moving the actuation member **26** upwardly from the position as is shown in Figure 3 to that position as is shown in Figure 4.

Secured to the actuation member **26** is a resilient strip **38** which has the free end **40** thereof extending through an aperture **42** in a plate **44** attached to the casing. The strip **38** is provided with a collar **46** thereon and a coil spring **48** coaxial with the strip **38** biases the plate **42** and the collar **46**. It is to be noted that the strip **38** is of sufficient length that it is either depressed in the position as is shown in Figure 3, or snaps to the position as is shown in Figure 4, the resiliency of the member **38** and the force exerted by the compression spring **48** serving to prevent any stable intermediate position and thereby causing a snap action for the strip **38**.

The strip **38** has attached thereto a wedge-shaped conductive member **50** which may be suitably insulated if desired. A pair of spaced contact plates **52** and **54** are mounted on a suitable support **56** and have conductors **58** attached thereto, the contacts **52** and **54** being adapted to be engaged by the wedge-shaped contact member **50** when the strip **38** and actuation member **26** are in the position as is shown in Figure 3. However, when the door is closed, the actuation member **26** will be raised, thus urging the contact member **50** out of engagement and to the position by means of a snap action as is shown in Figure 4.

In connecting the embodiment of the invention utilized in conjunction with horizontally swinging doors, ears **60** are attached to the housing or integrally formed therewith for reception of screws **62** or other suitable fasteners used to hold the switch in position. Optionally, when used with sliding doors, a bracket **64** may be provided for mounting the switch **14**, the housing of the switch likewise being provided with ears **60**. The bracket **64** is provided with apertures **66** therethrough for reception of fasteners and likewise is provided with apertures **68** therein through which other fasteners can extend. An enlarged slot or opening is provided in the bracket **64** so that the actuation member **26** can pass readily therethrough.

Threadedly secured in the neck portion **20** of the casing **18** is a tubular conduit **70** for suitably insulating the

conductors 58 as they pass upwardly from the switch 14.

Since from the foregoing, the construction and advantages of this door actuated switch are readily apparent, further description is believed to be unnecessary.

However, since numerous modifications will readily occur to those skilled in the art, after a consideration of the foregoing specification and accompanying drawings, it is not intended to limit the invention to the precise embodiment shown and described, but all suitable modifications and equivalents may be readily resorted to.

What is claimed as new is as follows:

1. A door actuated switch comprising a hollow casing having an opening in the bottom wall thereof, a door engageable actuation member pivotally attached to said casing, resilient means urging said member out of said casing, fixed contact means in said casing, a resilient strip secured to said member, a collar on said strip, a plate secured to said casing, said strip slidably extending through an aperture in said plate, a spring biasing said collar and said plate, and movable contact means on said strip adapted to engage said fixed contact means when said actuation member has been urged out of said casing, said actuation member having an arcuate rod attached thereto, a bracket mounted in said casing having a hole therethrough receiving said rod, said resilient means including a spring concentrically positioned about said rod biasing said bracket and said actuation member.

2. A door actuated switch comprising a hollow casing having an opening in the bottom wall thereof, a door engageable actuation member pivotally attached to said casing, resilient means urging said member out of said casing, fixed contact means in said casing, a resilient strip secured to said member, a collar on said strip, a plate secured to said casing, said strip slidably extending through an aperture in said plate, a spring biasing said collar and said plate, and movable contact means on said strip adapted to engage said fixed contact means when said actuation member has been urged out of said casing, said actuation member having an arcuate rod attached thereto, a bracket mounted in said casing having a hole therethrough receiving said rod, said resilient means including a spring concentrically positioned about said rod biasing said bracket and said actuation member, said actuation member being of wedge shape to present a cam surface for engagement by a door, said actuation member having a lip at the upper portion thereof adapted to engage the bottom wall of said casing to limit the outward movement of said actuation member.

3. A door actuated switch comprising a hollow casing having an opening in the bottom wall thereof, a door engageable actuation member pivotally attached to said casing, resilient means urging said member out of said casing, fixed contact means in said casing, a resilient strip secured to said member, a collar on said strip, a plate secured to said casing, said strip slidably extending through an aperture in said plate, a spring biasing said collar and said plate, and movable contact means on said strip adapted to engage said fixed contact means when said actuation member has been urged out of said casing, said fixed contact means comprising a spaced pair of angularly convergingly disposed contact plates, said movable contact means comprising a wedge-shaped conductive element adapted to seat between said contact plates and to complete an operative electrical circuit between said contact plates.

4. A door actuated switch comprising a hollow casing having an opening in the bottom wall thereof, a door engageable actuation member pivotally attached to said casing, resilient means urging said member out of said casing, fixed contact means in said casing, a resilient strip secured to said member, a collar on said strip, a plate secured to said casing, said strip slidably extending through an aperture in said plate, a spring biasing said collar and said plate, and movable contact means on said strip adapted to engage said fixed contact means when said actuation member has been urged out of said casing, said casing having a threaded neck portion for attachment to a conduit pipe through which electrical conductors extend, said electrical conductors being attached to said fixed contact means.

5. A door actuated switch comprising a hollow casing having an opening in the bottom wall thereof, a door engageable actuation member pivotally attached to said casing, resilient means urging said member out of said casing, fixed contact means in said casing, a resilient strip secured to said member, a collar on said strip, a plate secured to said casing, said strip slidably extending through an aperture in said plate, a spring biasing said collar and said plate, and movable contact means on said strip adapted to engage said fixed contact means when said actuation member has been urged out of said casing, said casing having a threaded neck portion for attachment to a conduit pipe through which electrical conductors extend, said electrical conductors being attached to said fixed contact means, said fixed contact means comprising a spaced pair of angularly convergingly disposed contact plates, said movable contact means comprising a wedge-shaped conductive element adapted to seat between said contact plates to complete an operative electrical circuit between said contact plates.

References Cited in the file of this patent

UNITED STATES PATENTS

1,835,981	Hammerly	Dec. 8, 1931
2,255,330	Platz	Sept. 9, 1941
2,335,811	Stearns	Nov. 30, 1943
2,373,681	Heikes	Apr. 17, 1945