Aug. 1, 1967 J. E. HILL ETAL 3,334,209

SWITCH CONSTRUCTION WITH ATTACHED LIGHT

Filed Dec. 27, 1965 2 Sheets-Sheet 1

FIG. 1

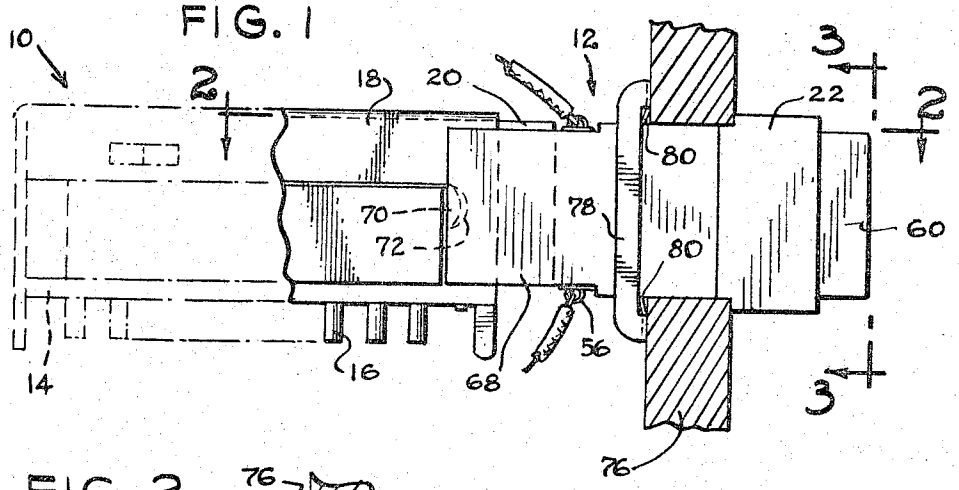


FIG. 2

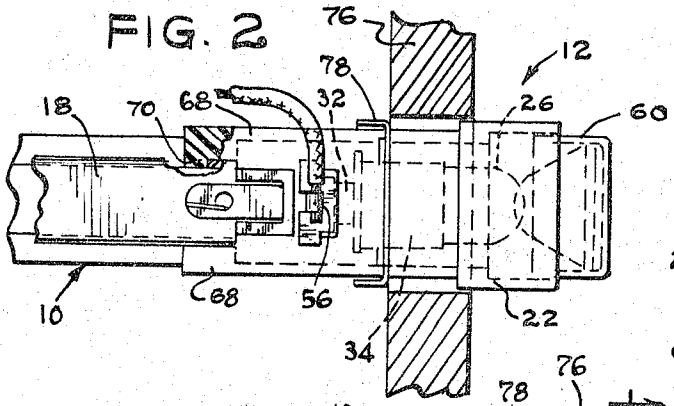
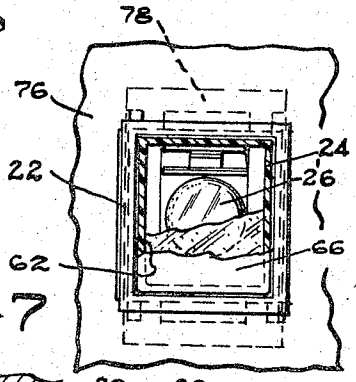


FIG. 3



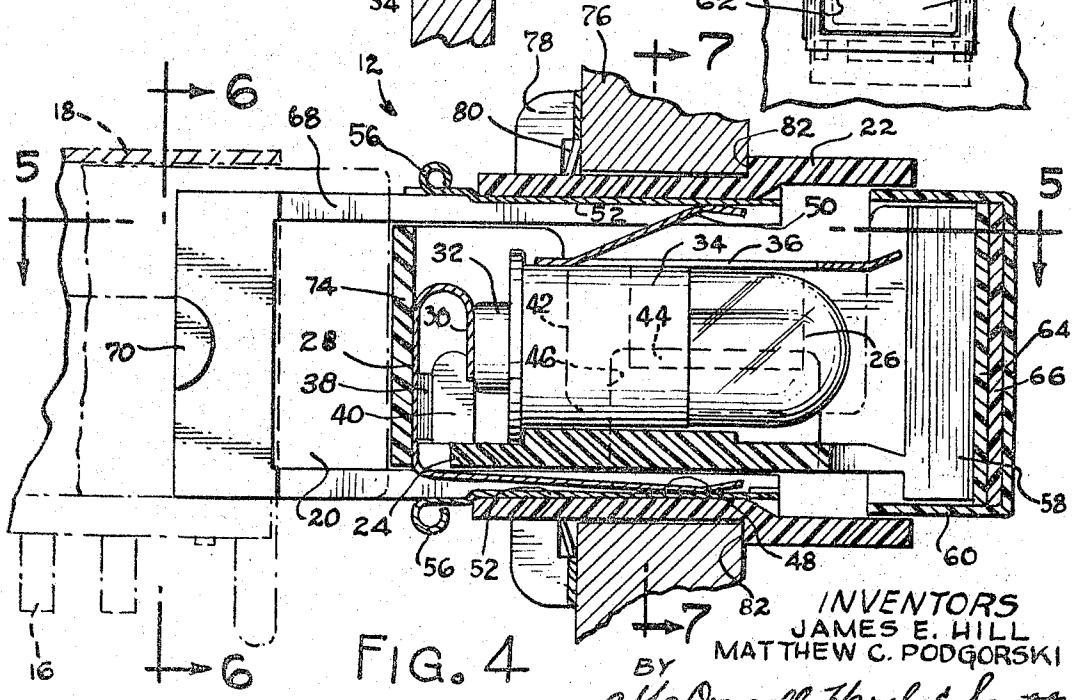


FIG. 4

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SWITCH CONSTRUCTION WITH ATTACHED LIGHT

Filed Dec. 27, 1965 2 Sheets-Sheet 2

FIG. 5

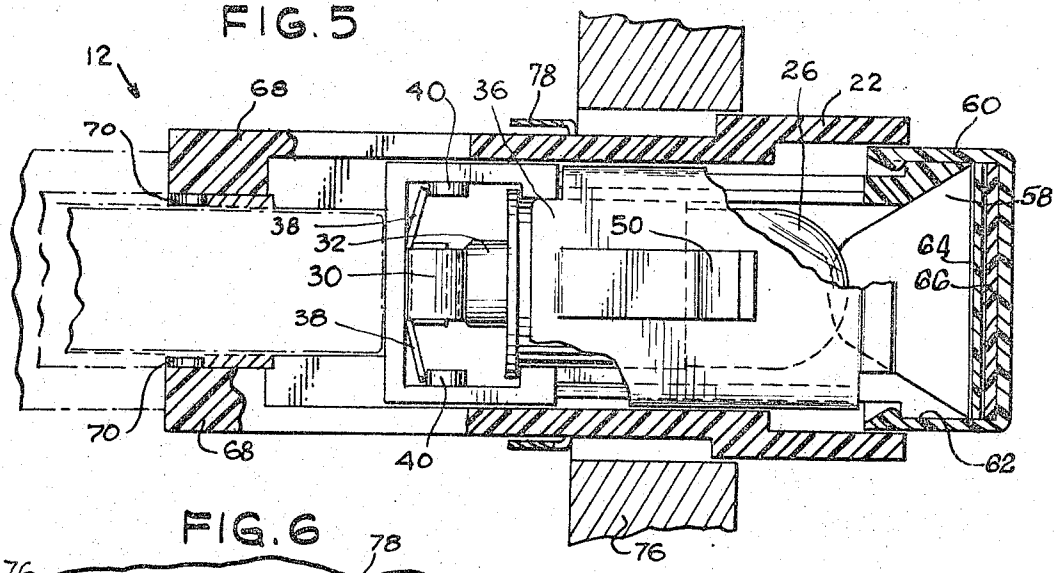


FIG. 6

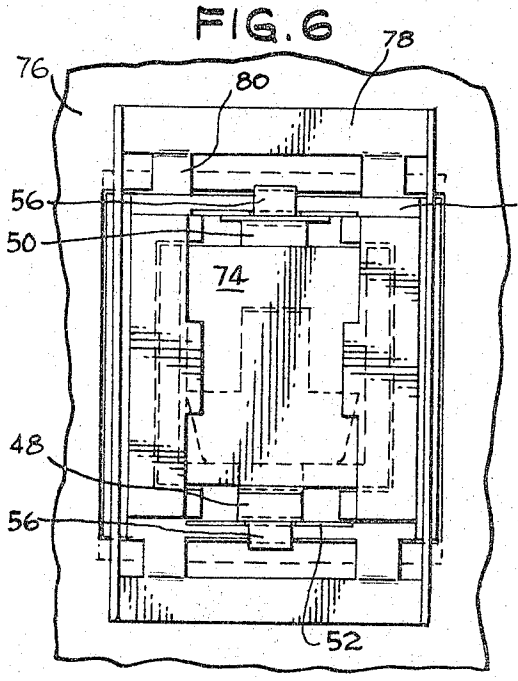


FIG. 7

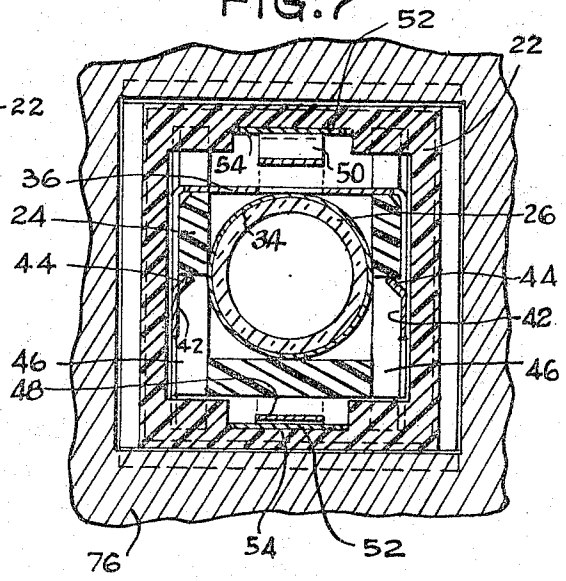


FIG. 8

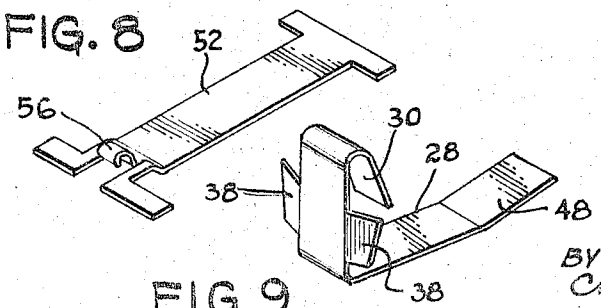


FIG. 9

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SWITCH CONSTRUCTION WITH ATTACHED LIGHT

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10 Claims. (Cl. 200—167)

This invention relates to an improved switch construction which includes an attached light. Constructions of this type are generally employed in applications where the conditions of the switch is to be determined by the condition of the light bulb associated therewith. Thus, a switch in the "on" position may result in the bulb being lit or vice versa.

Switch constructions having lights associated therewith have assumed various forms. These constructions, although performing in a satisfactory manner, are subject to various difficulties with regard to maintenance. Specifically, it is often extremely difficult to replace a bulb when it has worn out. In many instances, it is necessary to provide a completely new switch whereas in other cases, it is necessary to undergo time consuming dismantling operations.

Available constructions of the type described also create problems since, in most instances, the switch and light features are tied together in the construction. Thus, it is not possible to use the switch alone without the elements making up the light portions of the construction. It is also not possible to transfer the elements which provide the light feature from one switch to another since the designs are such that extremely difficult or impossible operations would be involved. Accordingly, anyone intending to use a large amount of switches must provide separate switches where light features are desired, and still other switches where these features are not desired. If any change in a system is necessitated, a completely new switch must then be utilized.

It is an object of this invention to provide a switch construction which is characterized by a unique light attachment.

It is a more particular object of this invention to provide a light attachment for switch construction which is an essentially independent unit whereby the attachment can be readily employed in combination with a variety of switch designs.

It is still a further object of this invention to provide a light attachment for switch constructions which can be easily attached and removed with respect to the switch constructions and which is readily maintained or replaced by reason of the relatively simple design of the switch construction.

These and other objects of this invention will appear hereinafter and for purposes of illustration, but not of limitation, specific embodiments of this invention are shown in the accompanying drawings in which:

FIGURE 1 is a side elevational view of a switch construction associated with the light attachment of this invention;

FIGURE 2 is a plan view, partly cut away, taken about the line 2—2 of FIGURE 1;

FIGURE 3 is a front elevation view, partly cut away, taken about the line 3—3 of FIGURE 1;

FIGURE 4 is an enlarged vertical sectional view illustrating the interior of the light attachment;

FIGURE 5 is a horizontal sectional view taken about the line 5—5 of FIGURE 4;

FIGURE 6 is a rear elevational view taken about the line 6—6 of FIGURE 4;

FIGURE 7 is a cross-sectional view taken about the line 7—7 of FIGURE 4;

FIGURE 8 is a perspective view of a terminal element employed in the light attachment; and,

FIGURE 9 is a perspective view of one bulb contact element employed in the light attachment.

The switch construction with which the light attachment of this invention is associated may comprise virtually any conventional design. Thus, the instant invention is directed to a light attachment which can be associated with switch constructions of the type which generally include a plurality of contacts along with a movable member of some type which provides for making and breaking of the contacts. The switch attachment of this invention is adapted to be associated with mounting means for the switch construction whereby the switch can be operated through the light attachment.

The light attachment comprises an outer housing with end portions for releasably connecting the housing to the mounting means of the switch construction. A light bulb carrying element is located within the housing and is slidable relative to the housing. This carrying element is adapted to engage the movable member of the switch construction whereby sliding movement of the element will operate the switch. Suitable contacts are provided whereby the light bulb of the attachment will operate, depending on the manner in which electrical connections are made.

In the drawings, there are illustrated a switch construction generally designated by the numeral **10** and a light attachment characterized by the features of this invention generally designated by the numeral **12**. In the following explanation, reference will be made to the association of the light attachment with a switch construction such as disclosed in applicants' copending applications entitled "Switch Constructions," Ser. No. 439,009 and filed Mar. 11, 1965, and entitled "Spring Operated Switch," Ser. No. 516,301, and filed Dec. 27, 1965. The description of the invention will make it apparent, however, that the light attachment **12** can be readily associated with a wide variety of different constructions.

The switch illustrated comprises an insulating base **14** which holds stationary contacts **16**. A housing **18** is mounted on the base, and a movable member **20** is included within the housing. As disclosed in the aforementioned copending applications, the movable member supports contacts whereby movement of this member will provide the desired switching action. A spring arrangement (not shown) normally holds the member **20** in the outward position illustrated. Suitable latching means such as are described in said applications may be utilized for holding the member **20** in an inward switching position.

The light attachment **12** of this invention comprises an outer housing **22**, and an inner bulb carrying element **24**. A bulb **26** is situated on this element, and a first contact **28** includes a contact portion **30** which engages the base contact **32** of the bulb. The shank **34** of the bulb is engaged by a second contact **36**.

The contact **28**, also shown in FIGURE 9, includes wing members **38** which engage protrusions **40** formed in opposite side walls of the element **24** (see FIGURE 5). The contact member **28** is clipped into position for purposes of easy assembly.

The contact member **36** includes downwardly extending side portions **42** which in turn define bent-in portions **44**. This contact member is snapped into place when the portions **44** fit within openings **46** defined by the side walls of the element **24**.

The contact member **28** defines a contact leaf **48**, and the contact member **36** defines a similar contact leaf **50**. A pair of contact members **52** are associated with the interior walls **54** of the housing **22**. The respective leaves **48** and **50** engage these members **52** to provided electrical connections for the respective bulb portions **32** and **34**.

Each of the contact members 52 terminates in a terminal portion 56 which is exposed with respect to the housing 22. Obviously, electrical leads can be attached to the terminals 56 whereby the bulb 26 will be lit whenever a circuit is completed between the terminals 56.

The bulb carrying element 24 extends outwardly of the housing 22 to define an exposed end 58. The end 58 includes a cap 60 which defines a central opening 62. Light transmitting plates 64 and 66 are included within the cap 60 whereby the light from the bulb 26 will be visible through these plates.

In using the light attachment, the attachment is first connected to a switch by means of extensions 68 of the housing 22. Each of these extensions defines a protruding portion 70 which is adapted to fit into a recess 72 defined by the switch housing. As best shown in FIGURE 2, the respective extensions 68 fit around the end of the switch whereby the protrusions 70 can snap into the recesses 72. The movable member 20 of the switch 10 engages the back wall 74 of the bulb carrying element 24 of the light attachment. It will be apparent that when the exposed cap portion 60 of the light attachment is pushed inwardly, the carrying element 24 will slide inwardly and the movable member 20 will also be moved inwardly to provide for switch actuation.

The light attachment can be associated with a switch in the manner described without any other supporting means being provided. It is contemplated, however, that the entire assembly could be associated with a wall 76 of a cabinet or the like by means of a retainer element 78. This element includes bent-in portions 80 which tend to dig into the housing 22 to retain the housing against movement relative to the wall 76. The shoulders 82 defined by the housing cooperate in locking the assembly in place.

The construction described can be utilized in an arrangement wherein the terminals 56 are connected to one or more of the terminals 16 of the switch 10. In such an arrangement, the bulb 26 will be lit when the switch is in a particular position. It is contemplated, however, that the terminals 56 could be connected in a completely independent circuit. With such an arrangement, the bulb 26 will be operated upon the occurrence of some circumstance requiring actuation of the switch 10.

It will be appreciated that the construction described is characterized by many distinct advantages. The light attachment can be associated with a switch in an extremely simple fashion without in any way requiring any significant change in the switch construction. The light attachment can be readily removed without disrupting the switch operation, and the same attachment can be associated with a variety of switches. Upon failure of either of the switch or light attachment, replacement can be accomplished without sacrificing the element which remains in working condition.

The design of the light attachment is such that each of the components thereof can be quickly snapped into place whereby assembly can be undertaken on a highly economical basis. Bulb replacement can be easily effected since the sliding element retaining the bulb can be readily removed. In this connection, it will be noted that the bulb replacement is accomplished by pulling the element 24 outwardly. Accordingly, if the attachment is associated with a cabinet wall, such as shown at 76, the bulb replacement can be undertaken without in any way disrupting the srtuctural operation of the system. The leaf members 48 and 50 normally retain the sliding element 24 in resilient engagement with the housing 22. Removal of the element 24 for bulb replacement is easily accomplished since the resilient pressure of the elements 48 and 50 is easily overcome.

It will be appreciated that various changes and modifications may be made in the construction described which provide the characteristics of this invention without departing from the spirit thereof particularly as defined in the following claims.

That which is claimed is:

1. In a switch construction which includes a plurality of contacts, a movable member for making and breaking contacts, and a mounting means for said movable member and said contacts, the improvement comprising a light attachment for said construction, said attachment including an outer housing having end portions at an inner end releasibly connecting the attachment to said mounting means of the switch, a sliding element located within said housing and slidable relative to the housing, the outer end of said housing defining an opening for receiving said sliding element, a light bulb mounted on said sliding element for movement therewith, a light transmitting member attached to the exposed outer end of said sliding element whereby said outer end is adapted to be pushed for imparting sliding movement to said sliding element and whereby light from said bulb is visible through said outer end, the inner end of said sliding element operatively engaging the movable member of said switch whereby sliding movement of said sliding element operates said switch, contact members carried by said sliding element and movable with the sliding element for contacting said bulb, terminal elements associated with said housing, said contact members on the sliding element having wiping contact with said terminal elements, and including means for releasibly holding said sliding element within said housing, said sliding element being releasible from said holding means and then removable as a unit which includes said bulb through the open outer end of the housing.

2. A construction in accordance with claim 1 wherein said contact members are maintained in contact with said terminals in all positions of said sliding element.

3. A construction in accordance with claim 1 including means connecting said terminals to contacts of the switch construction whereby said bulb will be lighted in one position of said movable member.

4. In a pushbutton switch construction of the type including a plurality of stationary contacts, a movable member carrying additional contacts, and mounting means for said movable member and said stationary contacts, the improvement comprising a light attachment for said construction, said attachment comprising an outer housing having end portions releasibly connected to said mounting means, a light bulb carrying element located within said housing, said carrying element including an outer exposed end adapted to be pushed for actuation of the switch, and an inner end portion engaging said movable member for imparting movement thereto, contact members on said carrying element for contacting a bulb carried by the carrying element, terminals associated with said housing, and means for connecting said terminals to said contact members, the contact members of said carrying element including leaf portions which extend outwardly toward respective interior wall portions of said housing, conductive members located on said wall portions with said leaf portions extending into bearing contact therewith, and wherein said terminals comprise integral extensions of said conductive members.

5. A construction in accordance with claim 4 wherein said leaf portions are retained in contact with said conductive members in all positions of the switch.

6. A construction in accordance with claim 4 wherein said one end of the carrying element defines an opening, and including light transmitting members located in said opening whereby light from said bulb is visible through said one end.

7. A construction in accordance with claim 4 wherein said housing defines extensions formed on opposite sides thereof whereby the end of said switch construction including said movable member is adapted to be received between said extensions, attaching means defined by said extensions, and means defined by said switch construction for receiving said attaching means for thereby providing

the releasible connection of the light attachment with said switch construction.

8. A construction in accordance with claim 4 wherein said carrying element and said housing are formed of an insulating material, and wherein said terminals and said contact members comprise metal elements which are adapted to be clipped into position for association with said attachment.

9. A construction in accordance with claim 4 wherein said light bulb carrying element is removably positioned in said outer housing and is adapted to be removed from the end of the housing opposite said switch construction.

10. A construction in accordance with claim 4 wherein said leaf portions serve to hold said bulb carrying element in position within said housing, and wherein said carrying element is adapted to be removed from the end of the housing opposite the switch construction by sliding the carrying element out of contact with said leaf portions.

References Cited

UNITED STATES PATENTS

3,157,771	11/1964	Roeser	200—167
3,267,245	8/1966	Vincent	200—167

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