

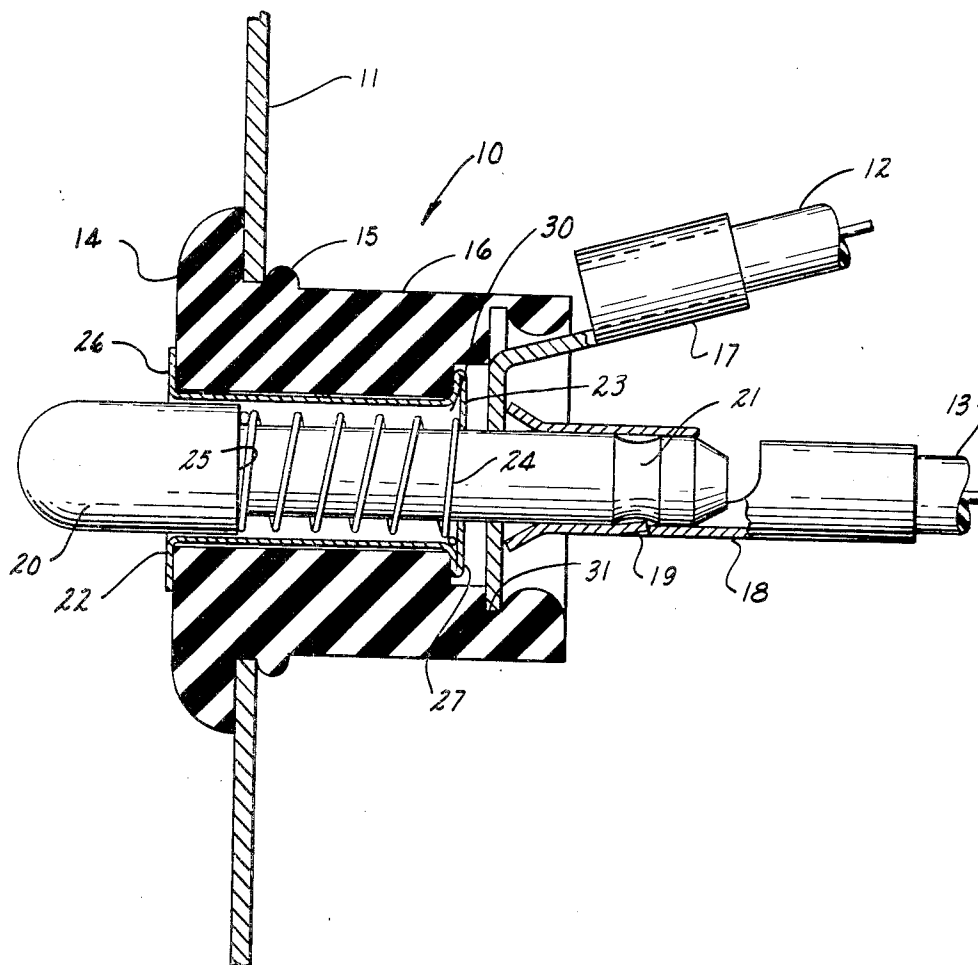
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AUTOMOBILE DOOR SWITCH

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AUTOMOBILE DOOR SWITCH

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3 Claims. (Cl. 200—61.82)

This invention relates in general to lighting switches and in particular to door switches used, as for example, in automobiles.

In general, the operation of these switches is such that when a door is opened, interior lights are energized. In the case where an automobile door is opened, as when passengers are boarding or alighting, interior courtesy lights are lighted. Conversely, the lights are extinguished when the doors of the vehicle close. The switch which accomplishes the foregoing is ordinarily incorporated into the door jamb and operates to close contacts on the opening of the door and to break the contacts on the closing of the door.

It is an object of this invention to provide an automotive door switch of the type described wherein the switch casing is completely resilient. The use of a resilient switch casing facilitates the insertion of the switch casing during the assembly of the automobile. Similarly the resiliency of the switch casing facilitates the removal of the casing for repair of the door switch. In addition, such resiliency makes it possible to attach harness terminals quickly and easily.

It is another object of this invention to provide a door switch wherein the harness terminals themselves make and break as electrical contacts to avoid the necessity for additional electrical circuitry in the door switch.

It is still another object of this invention to provide means for maintaining the switch in the assembled condition prior to the attachment of the harness leads.

Further objects and advantages of the invention will be apparent from the following description, reference being had to the accompanying drawing wherein a preferred embodiment of the present invention is clearly shown.

In the drawings the figure is a side elevation of a mounted and assembled door switch with mounting plate broken away.

Before explaining the present invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also, it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

A preferred embodiment of the invention is illustrated in the figure. The switch, indicated generally at 10, is shown mounted in the door frame 11. Two leads are shown entering the switch one of which leads to a power source or, car battery, while the other is connected to a courtesy lamp, which is not shown. The lamp is in turn grounded through its base which is a well known method of providing a ground return to complete automotive lamp circuits. The switch therefore operates to open and close the circuit between the car battery and the courtesy light.

The switch 10 is mounted to the frame 11 by means

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of the flange 14 and the shoulder 15. The spacing between the flange and the shoulder is such that the flange and shoulder will press against the frame to hold the switch firmly in place. The flange 14 and shoulder 15 may be integral molded parts of the grommet 16. The grommet 16 is formed from any suitable resilient material, rubber being preferred.

The figure illustrates the location of the terminals 17 and 18 of the leads 12 and 13. Terminal 18 of lead 13 is attached directly to the push rod 20 by means of the detent 19 in the terminal. The detent 19 seats in the annular groove 21 of the push rod to hold the terminal fast to the push rod. The terminal 18 normally abuts the terminal 17. The inventor prefers that lead 13 be the battery wire and that lead 12 connect the switch to the lamp, although this may be reversed without affecting the operation of the switch.

A ferrule 22 is disposed in a suitable cavity in the grommet 16 to serve as a guideway and support for the push rod 20. The coil spring 24 is engaged at one end by the end 23 of the ferrule and at the other by the shoulders 25 of the push rod 20. The cup shaped end 23 of the ferrule has an opening therein to permit free reciprocatory movement of the push rod. The opposite end of the ferrule is flared outwardly to permit the free passage of the push rod segment of greatest diameter. The flanges 26 and 27 serve to anchor the ferrule securely in the grommet 16.

The coil spring 24 has a varying coil diameter to avoid disassembly of the switch after initial assembly and prior to attachment to the automotive harness leads. The turn adjacent the shoulders 25 are of reduced diameter so that the spring grips the push rod and remains affixed thereto. The opposed end of the coil spring has an enlarged turn which expands into the radius 30 of the folded section of the ferrule. Intermediate turns are uniform and pass freely in the ferrule so as not to drag in operation of the switch.

In the assembly of the vehicle, the harness lead wires are threaded into the aperture provided. The next step is to attach the lead 12 by pressing the terminal 17 into the recess 31 provided in the grommet. The push rod 20 is then pressed into the switch so that the terminal receiving end is extended outwardly to receive the terminal 18. The terminal 18 is pressed onto the push rod until the terminal detent 19 is seated in the groove 21. The leads are then pushed back through the aperture in the mounting frame and the switch is pressed into the mounting frame so that the shoulder 15 passes through the aperture and the switch is mounted as indicated. The ease and swiftness with which this assembly operation can be carried out is highly desirable in automotive and appliance assembly.

In operation, the door of the vehicle engages the head 20 of the push rod. When the door is in the open position, the push rod is in its normally extended position. When the door is closed, the door presses against the head 20 of the push rod to drive the push rod into the switch. The terminal 18 is in rigid engagement with the push rod and travels with the push rod. When the door of the vehicle is open and the push rod is extended the terminal 18 is in electrical engagement with the terminal 17 and a circuit is completed through the courtesy light. When the vehicle door is closed, the push rod carries the terminal 18 away from the terminal 17 to break the electrical contact and the circuit including the courtesy light is opened. Thus, when the automobile door is open the courtesy light is on and when the door is closed the courtesy light is extinguished. It can be readily seen that in using the wire terminations as contacts the construction of such switches is greatly simplified. The use of a rubber grommet provides for retaining the switch in

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the mounting plate, and its insulating character permits the usage of the wire terminals as contacting elements.

Having thus described my invention, I claim:

1. In a door switch of the class wherein the closing of the door against the door jamb pushes a yieldable rod inwardly through a suitable aperture in the door jamb, in combination with said rod, a resilient grommet adapted for mounting in said door jamb, a coil spring yieldably engaged with and axially disposed upon said rod, a ferrule centrally positioned in said grommet and disposed about said coil spring and adapted to permit reciprocal movement of said rod, a wire terminal attached to said rod near the end remote from the door engaging end, a second wire terminal held by said resilient grommet, said coil spring yieldably urging said rod so that the first mentioned wire terminal attached to the rod is normally in electrical contact with said second mentioned wire terminal.

2. In a door switch of the class wherein the closing of the door against the door jamb pushes a yieldable rod inwardly through a suitable aperture in the door jamb, in combination with said rod, a resilient grommet with a flange and shoulder so positioned to seat the peripheral edge of said door jamb aperture therebetween, a coil spring yieldably engaged with and axially disposed upon said rod, a ferrule centrally positioned in said grommet and disposed about said coil spring and adapted to permit reciprocal movement of said rod, a wire terminal attached to said rod near the end remote from the door

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engaging end, a second wire terminal held by said resilient grommet, said coil spring yieldably urging said rod so that the first mentioned wire terminal attached to the rod is normally in electrical contact with said second mentioned wire terminal.

3. In a door switch of the class wherein the closing of the door against the door jamb pushes a yieldable rod inwardly through a suitable aperture in the door jamb, in combination with said rod, a resilient rubber grommet with a flange and shoulder so positioned to seat the peripheral edge of said door jamb aperture therebetween, a coil spring yieldably engaged with and axially disposed upon said rod, a ferrule centrally positioned in said grommet and disposed about said coil spring and adapted to permit reciprocal movement of said rod, a wire terminal attached to said rod near the end remote from the door engaging end, a second wire terminal held by said resilient rubber grommet, said coil spring yieldably urging said rod so that the first mentioned wire terminal attached to the rod is normally in electrical contact with said second mentioned wire terminal.

References Cited in the file of this patent

UNITED STATES PATENTS

25	2,343,060	Horning	Feb. 29, 1944
	2,641,662	Liley	June 9, 1953
	2,658,130	Bondurant	Nov. 3, 1953
	2,658,968	Janos	Nov. 10, 1953
	2,671,151	Hollins	Mar. 2, 1954