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2,671,151

CONTACT DEVICE

Filed Feb. 16, 1951

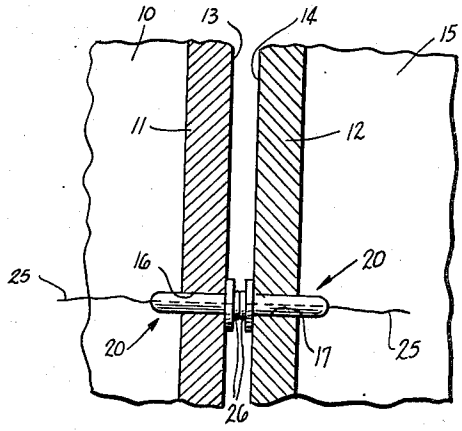


Fig. 1.

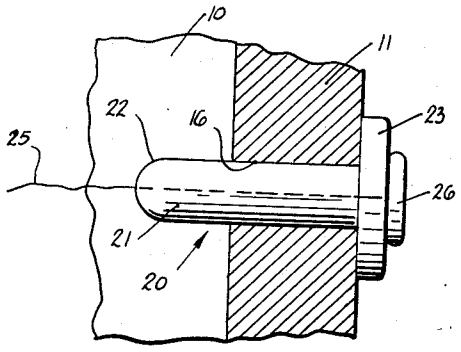


Fig. 2.

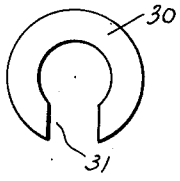


Fig. 5.

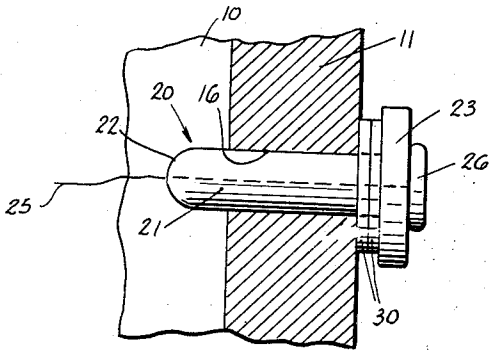


Fig. 4.

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CONTACT DEVICE

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6 Claims. (Cl. 200—166)

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This invention relates to electric circuit closure devices and, more particularly, to circuit controllers arranged to be mounted on relatively movable elements, such as a door and its jamb, to make and break a circuit responsive to relative movement of such elements.

Devices of this type frequently comprise cooperating contact members arranged on the hinged edge of a door and the adjacent jamb to make and break control or energizing circuits. For example, such controlled circuits may be used for door unlatching, burglar alarms or the like.

One particular application to which the present invention is directed is the control of circuits to a vehicle door, such as an energizing circuit for a motor driven window operator, etc. For example, it is desirable, for practical reasons, that such circuits be automatically interrupted when the car door is open to prevent movement of the window operator when the door is open.

The present invention comprises a simple and inexpensive contact arrangement which is easily installed in a door and its hinge jamb and easily adjusted to accommodate variations in clearance. To this end, each contact member comprises an elongated plug of resilient or compressible insulating material, having an electric conductor extending substantially centrally of the plug. The outer end of the plug is shouldered or enlarged and carries a contact terminal or washer soldered to the end of the conductor.

The usual car door and body construction has apertures formed in the jamb and hinge edge of the door. The invention plugs are positioned by simply forcing the plugs into tight fits in these apertures, the insertion being limited as to final position by the shoulder or enlargement. To facilitate such insertion, the opposite end of the plug may be tapered or rounded. In order to insure engagement of the contacts of two plugs, one in the hinge edge of the door and the other in the jamb, irrespective of clearance variations, horseshoe or U-shaped spacers may be slipped over the plug shank to lie beneath the enlarged head. Thereby, facile adjustment of the contacts is readily assured.

For an understanding of the invention principles, reference is made to the following description of a typical embodiment thereof, as illustrated in the accompanying drawing. In the drawing:

Fig. 1 is a partial medial sectional view of a car door and its hinge jamb illustrating the invention contact arrangement;

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Fig. 2 is an enlarged view of a portion of Fig. 1;

Fig. 3 is a plan of an adjustment spacer; and

Fig. 4 is a view similar to Fig. 2 illustrating the application of the spacers of Fig. 3.

Referring to Figs. 1 and 2, a vehicle door 10 is illustrated as having a vertical hinge edge member 11 operatively associated with a jamb member 12 of the vehicle body 15, member 11 being hingedly connected to member 12 for swinging of door 10 relative to body 15. The door and body, in the case of automotive vehicles, are generally large metal stampings suitably reinforced by structural channels, beams or the like.

Members 11 and 12 are provided, through their adjacent surfaces 13, 14, with apertures, such as 16, 17, for the mounting of cushioning blocks and other attachments. In accordance with the present invention, a horizontally and axially aligned pair of these apertures are used to mount contact devices 20 controlling energizing circuits for electric mechanisms mounted in the door.

These contact devices are in the nature of elongated plugs of resilient or compressible dielectric material, such as rubber. Each plug has a shank 21, preferably rounded or tapered at one end 22, and having an enlarged head 23 at the opposite or normally outer end. A circuit wire 25 extends substantially centrally through shank 21 and head 23, continuing beyond inner end 22 for connection in a suitable circuit. The outer end of wire 25 is soldered or otherwise connected to a flat contact member 26 lying against head 23.

To mount the contact devices 20, wire 25 is threaded through an aperture 16 or 17 and shank 21 forced into the aperture until head 26 seats against surface 13 or 14. When door 10 is closed, the contact members 26 of the two plugs 20 are engaged, completing the circuit for the door contained mechanism. Due to the resilience of heads 23, substantial pressure engagement of contacts 26 is maintained.

However, there may be cases where the clearance between member 11 and jamb 12 is sufficiently large that contacts 26 will not be engaged when the door 10 is closed. In such cases, spacers 30 (Fig. 3) are inserted over shank 21 beneath head 23 in a number sufficient to assure contact of elements 26 when door 10 is closed. These spacers are of interrupted annular, or U-shape, or horseshoe shape, having an opening 31 to allow the spacer to be slipped over shank 21. Opening 31 is narrower than the shank, so that a force fit is necessary, thus assuring firm seating of the spacers on the shank.

While a specific embodiment of the invention has been shown and described in detail to illustrate the application of the invention principles, it should be understood that the invention may be otherwise embodied without departing from such principles.

What is claimed is:

1. An electrical contact making device arranged to be mounted in an aperture through a surface, said device comprising, in combination, an elongated shank of non-conductive resilient material dimensioned to have a tight fit through the aperture and mounted therein under application of pressure, an elongated conductor extending substantially centrally through said shank, and a contact member lying against the outer end of said shank and in electrically conductive relation with said conductor.

2. An electrical contact making device arranged to be mounted in an aperture through a surface, said device comprising, in combination, an elongated shank of non-conductive resilient material dimensioned to have a tight fit through the aperture and mounted therein under application of pressure, and having an enlarged head on its outer end juxtaposed against said surface, an elongated conductor extending substantially centrally through said shank and head, and a contact member lying against the outer face of said head and in electrically conductive relation with said conductor.

3. An electrical contact making device arranged to be mounted in an aperture through a surface, said device comprising, in combination, an elongated shank of resilient dielectric material dimensioned to have a tight fit through the aperture and mounted therein under application of pressure, an elongated conductor extending substantially centrally through said shank, and a contact member lying against the outer end of said shank and in electrically conductive relation with said conductor.

4. An electrical contact making device arranged to be mounted in an aperture through a surface, said device comprising, in combination, an elongated shank of resilient dielectric material dimensioned to have a tight fit through the aperture and mounted therein under application of pressure, and having an enlarged head on its outer end juxtaposed against said surface, an elongated conductor extending substantially centrally through said shank and head, and a contact member lying against the outer face of said head and in electrically conductive relation with said conductor.

5. An electrical contact making device arranged to be mounted in an aperture through a surface, said device comprising, in combination, an elongated shank of non-conductive resilient material dimensioned to have a tight fit through the aperture and mounted therein under application of pressure, and having an enlarged head on its outer end juxtaposed against said surface, an elongated conductor extending substantially centrally through said shank and head, a contact member lying against the outer face of said head and in electrically conductive relation with said conductor, and an incompletely annular spacer arranged to fit over said shank and lie between said head and such surface.

6. An electrical contact making device arranged to be mounted in an aperture through a surface, said device comprising, in combination, an elongated shank of non-conductive resilient material dimensioned to have a tight fit through the aperture and mounted therein under application of pressure, and having an enlarged head on its outer end juxtaposed against said surface, and a tapered inner end for guiding the shank into the aperture, an elongated conductor extending substantially centrally through said shank and head, a contact member lying against the outer face of said head and in electrically conductive relation with said conductor, and an incompletely annular spacer arranged to fit over said shank and lie between said head and such surface.

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