

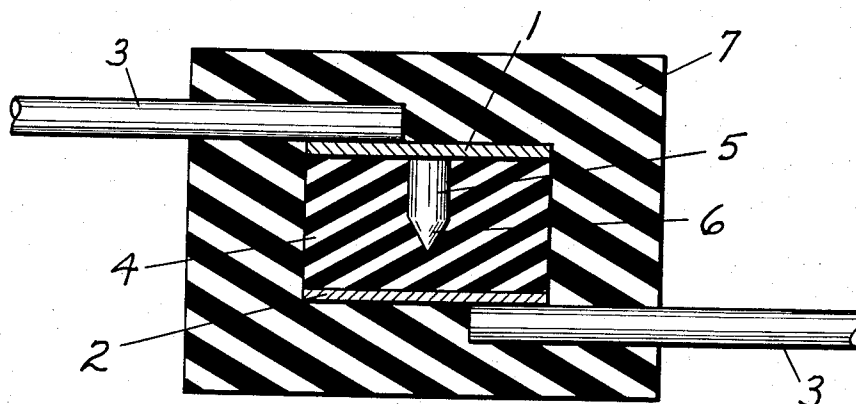
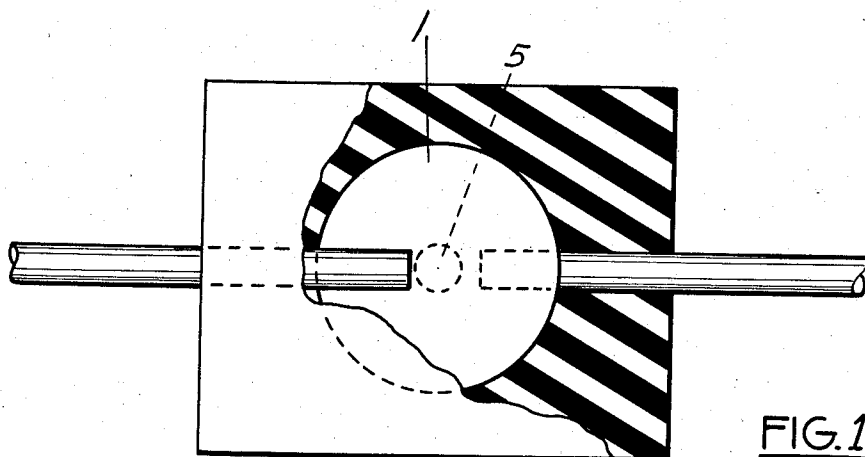
March 10, 1959

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2,877,324

SWITCH

Filed April 8, 1957



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2,877,324

SWITCH

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Application April 8, 1957, Serial No. 651,544

3 Claims. (Cl. 200—168)

This invention is intended to produce a hermetically sealed switch operable by external pressure on the enclosing housing. In a preferred form, the switch contacts are normally held separated by a body of silicone rubber and under pressure, one of the contacts which is chisel shaped is forced through a slit in the silicone rubber into contact with the other switch contact. Both switch contacts are enclosed in a flexible rubber housing which is bonded to the contacts and provides a hermetic seal. The switch has proven to have exceptional arc quenching properties even after many operations.

In the accompanying drawing, Fig. 1 is a top view partly broken away of a switch and Fig. 2 is a sectional elevation.

The switch has upper and lower contact members 1 and 2 to which are connected suitable leads 3. The contacts 1 and 2 are bonded to opposite ends of a silicone rubber cylinder 4 so that the contacts are held in opposed but spaced relation by the silicone rubber. On one of the contact members, for example, the upper contact member 1, there is suitably fixed a beryllium copper contact member 5 which is embedded in and in contact with the silicone rubber cylinder 4 and extends toward the other contact member 2. The contact 5 has a chisel edge 6 so that upon applying axial pressure between the contacts 1 and 2, the chisel point readily penetrates the silicone rubber which normally separates the contacts and makes contact with the other contact member 2. Upon release of the axial pressure, the contacts 1 and 2 separate due to the resilience of the silicone rubber cylinder breaking the contact between the chisel point 6 and the contact member 2.

In the contact making position, the chisel point 6 insures good contact with the contact member 2. As the axial pressure is removed, the contacts separate and the silicone rubber closes the space around the chisel point 6 and quickly snuffs out any arc. Even after repeated operations, the arc resistance continues. Burning of silicone rubber produces a non-conducting or silica residue which results in longer life than with a natural rubber cylinder which would produce a carbon or conductive residue.

In the manufacture, the contact 1 with the contact 5 assembled thereto and the contact 2 are first bonded to opposite ends of the silicone rubber cylinder 4. The

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contact 5 very readily penetrates the silicone rubber cylinder so that no pre-forming is necessary. The assembly is then enclosed within a rubber housing 7 which is bonded not only to the disc-shaped contact members 1 and 2 but also the leads 3 so as to provide a complete hermetic seal. The contact closing pressure is applied externally to the housing in any suitable manner and is directly transferred to the contacts by flexing of the housing. The rubber for the housing 7, which is flexible, is stiffer or of higher durometer than the silicone rubber cylinder 4. This insures radially inward pressure on the side walls of the silicone rubber cylinder which assists in separating the contacts upon release of the contact closing pressure.

What is claimed as new is:

1. A switch comprising a cylinder of silicone rubber, disc shaped contacts bonded to opposite ends of the cylinder, and a pointed prong on one of the contacts embedded in the cylinder and normally spaced from the other contact, the rubber of the cylinder filling the space between the contacts and engaging the prong, said prong being moved into contact making position by pressure on the contacts along the axis of the cylinder forcing the prong to penetrate the rubber which normally separates the contacts.

2. A switch comprising opposed disc shaped contacts in spaced relation to each other, a pointed prong on one of the contacts extending toward and normally spaced from the other contact, a body of rubber between the contacts and having the prong embedded therein, said prong being moved into contact making position by pressure on the contacts along the axis of the cylinder forcing the prong to penetrate the rubber which normally separates the contacts.

3. A switch comprising a cylinder of silicone rubber, disc shaped contacts bonded to opposite ends of the cylinder, a pointed prong on one of the contacts embedded in the cylinder and normally spaced from the other contact, the rubber of the cylinder filling the space between the contacts and engaging the prong, said prong being moved into contact making position by pressure on the contacts along the axis of the cylinder forcing the prong to penetrate the rubber which normally separates the contacts, and a housing of rubber of greater stiffness than the cylinder enclosing and sealing the cylinder and contacts, said housing exerting a radially inward pressure on the side walls of the cylinder and having provisions for receiving and transmitting externally applied pressure to the contacts in a direction along the axis of the cylinder.

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