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[31] **68.07852**

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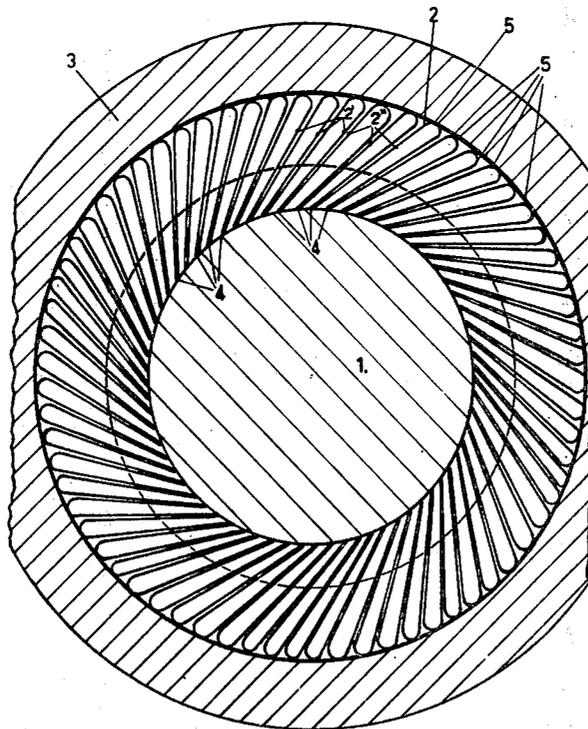
[54] **ELECTRIC CURRENT CONTACT**  
**3 Claims, 2 Drawing Figs.**

[52] U.S. Cl..... **200/166**

[51] Int. Cl..... **H01h 1/48**

[50] Field of Search..... **200/166**  
**(B1), 166 (B8)**

**ABSTRACT:** An electric switch having an axially movable switching contact and a resilient annular fixed contact. The fixed contact is in permanent contact with said switching contact and consists of a zigzag folded metal strip surrounded and supported by an annular holder. The metal strip is bent in the shape of a ring which snugly encloses the switching contact and is constituted by a circular series of pairs of contact lips.



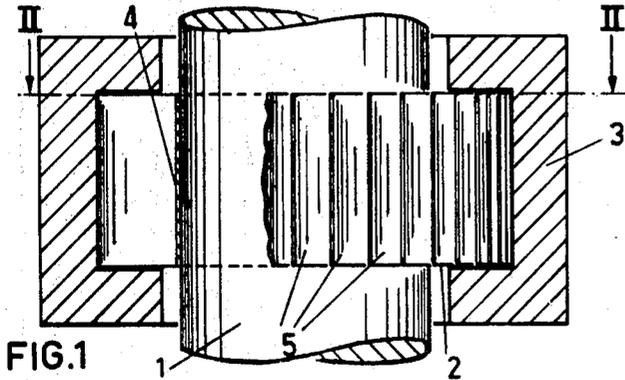


FIG. 1

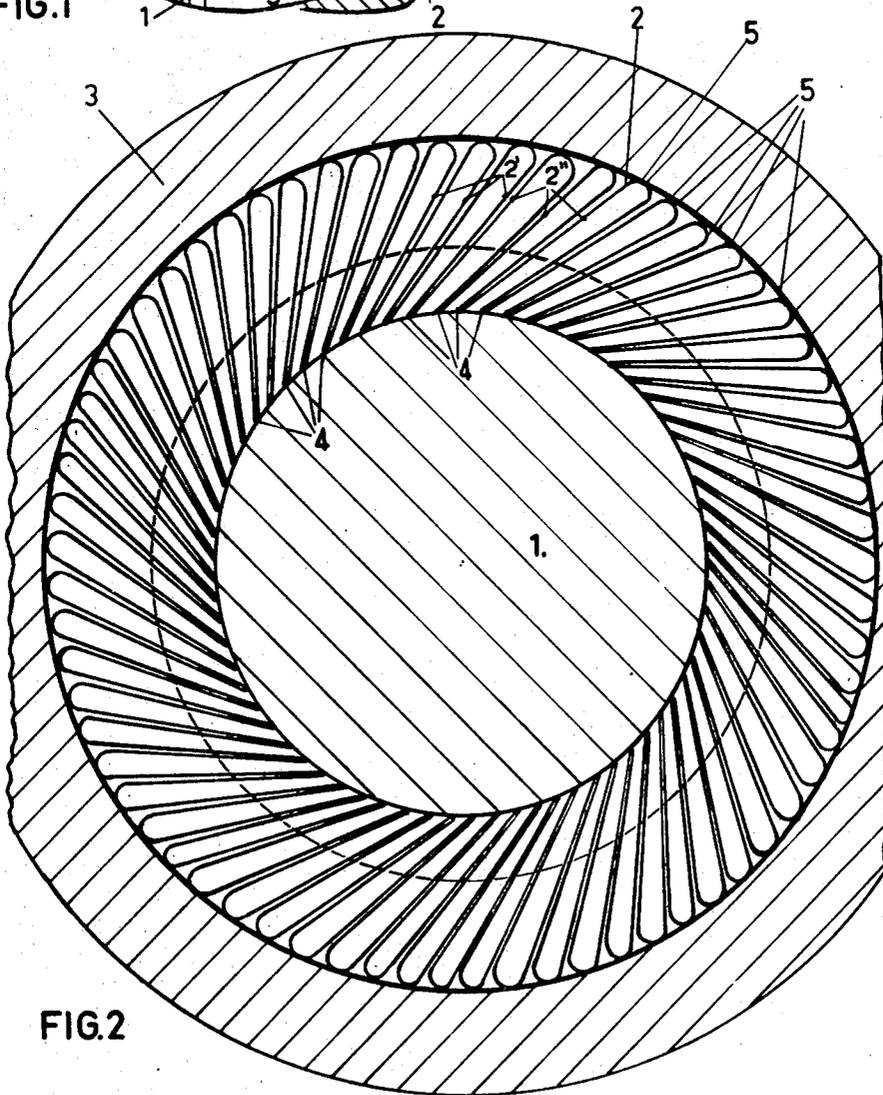


FIG. 2

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**ELECTRIC CURRENT CONTACT**

The invention relates to an electric switch comprising an axially movable switching contact and a resilient annular fixed contact which is in permanent contact with said switching contact and connects said switching contact electrically conductively with the circuit to be closed and opened by said switch.

The invention has for its object to provide a permanent electrically conductive connection between a terminal of the switch and the axially movable switching contact, said connection having a simple construction, requiring little space, being easy to mount, having practically no braking action on the switching contact, having no unfavorable influence on the electric field in the switch and maintaining under all circumstances that means also during operation under very large short circuit currents, a satisfactory conductive contact between the movable switching contact and the relevant stationary conductive parts of the switch. In accordance with the invention this is achieved by the provision of a fixed contact which is permanently in contact with the movable switching contact and consists of a zigzag folded metal strip surrounded and supported by an annular holder, said strip being bent in the shape of a ring which snugly encloses the switching contact and has in its free state an inner diameter which is smaller than the outer diameter of the switching contact. If in this construction the switching contact is inserted in the fixed contact the parts of the zigzag folded annularly bent strip of the fixed contact are forced a little out of their free position, so that the strip contacts with its folds lying at the inner circumference thereof, with resilient pressure the switching contact. The result thereof is that said ring comes to lie with a great number of individual resilient linear contact areas against the switching contact and, under all circumstances, a favourable current transfer is obtained between the switching contact and the annularly bent strip. Owing to its zigzag shape the strip has a large cooling surface, so that the fixed contact is well cooled and can be overloaded considerably.

It is advantageous to fold the zigzag folded metal strip bent in the shape of a ring in such a manner, that, at the inner circumference of said ring, the parts of said strip join in pair with sharp folds of 180° and thereby abut against each other in pairs throughout their length. Due to this construction a greater elastic deformation of the pairs of parts of the zigzag strip is possible, since said pairs of parts then act as resilient contact lips. As the outer periphery of the strip bent in the shape of a ring is longer than the inner periphery thereof, the pairs of parts may join, at the outer circumference of said ring, the adjacent parts by means of cylindrically bent portions, of which the radius is defined by the radius of said outer circumference and the number of pairs of parts of the strip.

The invention will be elucidated with the aid of the drawing. Therein is:

FIG. 1 partly an axial sectional view and partly an elevational view of an axially movable switching contact positioned in a fixed contact, said contacts forming part of a switch according to the invention and

FIG. 2 on a larger scale a cross-sectional view taken on the line II-II in FIG. 1.

In the drawing 1 is a portion of a movable switching contact in the shape of an axially movable switching rod. This switching contact is permanently snugly enclosed by a zigzag folded metal strip 2 which is bent in the shape of a ring. This zigzag folded annularly bent strip 2 is mounted in an annular holder 3, to which the circuit to be closed and to be interrupted by the switch is connected in a manner not shown. The holder 3 and the strip 2 constitute together a fixed contact, in which the switching rod 1 can be slidingly moved. The fixed contact cooperating with the switching contact and forming together therewith the switching element of the switch is not shown.

FIG. 2 illustrates how the strip 2 is folded and extends between the holder 3 and the switching rod. The strip is folded

in such a manner, that the folds 4 lying on the inner circumference of the ring formed by the strip are as acute as possible, so that the parts 2' and 2'' of the strip abut against each other in pairs throughout their length. At the outer circumference of said ring the pairs of parts 2', 2'' join with cylindrically bent portions 5. Since in the free state of the ring formed by the strip 2 the inner diameter of said ring is smaller than the outer diameter of the switching rod 1, the pairs of parts 2', 2'' will be forced aside, when the switching rod is inserted into the fixed contact, so that they will be forced with a certain spring force against the switching rod. The torque required for this spring force is taken up by the cylindrically bent portions 5 which bear against the inner periphery of the annular holder 3 and constitute in pairs a relatively large foot for each pair of parts 2', 2'' of the strip 2.

The movable switching contact may also be formed as an axially movable tubular contact.

We claim:

1. An electric switch comprising:

an axially movable switching rod, and a resilient annular fixed contact which is in permanent axially sliding contact with said switching rod and connects said switching rod electrically conductively with the circuit to be closed and opened by said switch;

said fixed contact comprising a stationary annular metal holder surrounding said switching rod, and a stationary zigzag folded metal strip bent in the shape of a closed ring and supported in said holder between said holder and said switching rod; and

the parts of the zigzag folded metal strip extending substantially tangentially in respect of the switching rod and being forced against said switching rod by their resiliency, said zigzag folded metal strip parts joining each other, at the inner circumference of the ring formed by said zigzag folded metal strip, in pairs with sharp folds of 180° and thereby lying substantially against each other in pairs throughout the major portion of their length.

2. An electric switch comprising:

an axially movable switching rod having a cylindrical outer surface and an annular fixed contact which is in sliding contact with said outer surface of the switching rod to connect said switching rod in electrically conductive relation with a circuit to be closed and opened by said switch; said fixed contact comprising a stationary metal holder having an annular recess surrounding said switching rod, and a zigzag metal strip seated in said recess to form an annulus surrounding and engaging said switching rod; said annular recess presenting a cylindrical surface concentric with said outer surface of the switching rod and spaced radially therefrom by a predetermined distance; and

the zigzag folding of said metal strip presenting strip parts of which adjacent pairs thereof are joined at the inner circumference of said annulus along acute folds and in which adjacent strip parts are joined at the outer circumference of said annulus along cylindrical bent portions, said cylindrical bent portions and said acute folds being parallel with said cylindrical bent portions engaging said cylindrical surface of said holder and said acute folds engaging said cylindrical outer surface of said switching rod, and each strip part being of a length between said acute bends and said cylindrical bent portions which is greater than said predetermined distance between the outer surface of said switching rod and said cylindrical surface of said holder whereby said strip parts are urged outwardly by said switching rod forcibly into contact with said cylindrical surface and resiliently into contact with said switching rod.

3. The electric switch according to claim 2 wherein said acute folds dispose adjacent pairs of said strip parts in contact with each other substantially throughout their lengths.