

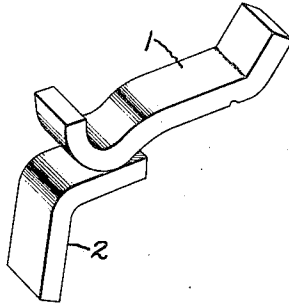
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L. ZICKRICK

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ELECTRICAL SWITCH CONTACT

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Inventor:  
Lyll Zickrick,  
by *Harry E. Durham*  
His Attorney.

## UNITED STATES PATENT OFFICE

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## ELECTRICAL SWITCH CONTACT

Lyall Zickrick, Schenectady, N. Y., assignor to  
General Electric Company, a corporation of  
New York

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11 Claims. (Cl. 200—166)

The present invention relates to electrical make-and-break switch contacts and more particularly to switch contacts which are capable of resisting relatively heavy current inrushes without welding of the contacts. Heretofore non-welding switch contacts have been produced. Generally, however, such contacts are expensive since they usually contain a large quantity of silver.

It is one of the objects of the present invention to provide a switch contact which not only resists welding under heavy current loads and heavy current inrushes but which is also relatively inexpensive.

The novel features which are characteristic of my invention are set forth with particularity in the appended claims. The invention itself however will be better understood by reference to the following specification when considered in connection with the accompanying drawing in which the single figure is a perspective view of a switch embodying the features of the present invention.

Referring more particularly to the drawing, I have indicated at 1 a movable switch contact member which has a rocking action against a stationary cooperating contact member 2. Both contacts consist of an alloy containing preferably about 97% copper, 2.5% lead and about 0.5% selenium. The alloy usually is made by introducing a master alloy consisting of about 80% lead and 20% selenium and having a melting point of about 980 to 1000° C. into molten copper. The resulting molten alloy may be cast into strips having a desired thickness and the strips thereafter cut into sections as indicated at 1 and 2 on the drawing.

Switch contacts of the above composition have a resistivity of about 2.23 microhms per cm<sup>3</sup>. Contacts about  $\frac{3}{8}$ " in diameter and about  $\frac{1}{8}$ " thick have withstood, without welding, approximately 45,000 operations on a switch test employing a 300 ampere inrush current.

Although I prefer to employ a switch contact having the composition indicated above, my invention is not limited to the specific percentages of ingredients recited. In general, the switch contact may have a lead content within the range of about 0.8% up to about 10%, the selenium constituting about 0.2% up to about 5% with copper the remainder. Good results have been obtained however with a contact which consists of copper and selenium, the selenium comprising about 0.2% to about 5% of the content of the alloy, and preferably about 3%.

I prefer to employ copper as the main ingredient of the alloy. However, if desired, a small

quantity, for example up to about 10%, of another soft, high conducting metal, such as silver, may be substituted for a part of the copper. The presence of silver however does not improve the properties of the contact.

What I claim as new and desire to secure by Letters Patent of the United States, is:

1. An electrical switch contact containing at least 85% of metal from the group copper and silver and containing at least 0.2% selenium said switch being characterized by its resistance to welding action upon relatively heavy current inrush.

2. A switch contact consisting substantially of about 97% copper and about 3% selenium.

3. A switch contact containing at least 85% of metal from the group copper and silver but containing an appreciable quantity of lead and at least 0.2% selenium, said contact being characterized by its resistance to welding upon relatively heavy current inrush.

4. A switch contact alloy characterized by its low resistivity and its resistance to welding action upon relatively heavy current inrush said alloy containing at least 85% of metal from the group copper and silver and 0.2% to 5% selenium, the silver when present comprising not appreciably more than 10% of the content of said alloy.

5. A switch contact containing at least about 0.8% of lead at least 0.2% of selenium, the remainder of the contact at least 85% of copper.

6. A switch contact consisting substantially of copper, lead and selenium, the copper content of said contact being at least 90% and the selenium content varying from an appreciable quantity up to about 5%.

7. A switch contact containing about 97% copper, about 2.5% lead, and about 0.5% selenium.

8. A switch contact containing about 0.8% to about 10% lead, about 0.2% to about 5% selenium with the remainder copper.

9. A switch contact containing at least 85% copper and at least 0.2% selenium.

10. A switch comprising a stationary contact and a movable contact, each of said contacts consisting substantially of an alloy of copper, lead and selenium the copper comprising at least 85% and the selenium at least 0.2% of the alloy.

11. A switch comprising a stationary contact and a movable contact each of said contacts containing at least 85% of metal from the group copper and silver but containing appreciable quantities of lead, and at least 0.2% selenium, said contacts being characterized by their resistance to welding under a relatively heavy current inrush and by their relatively low resistance.

LYALL ZICKRICK.