

UNITED STATES PATENT OFFICE

2,289,708

ELECTRICAL CONTACT

John G. Jackson, Detroit, Mich., assignor to
Square D Company, Detroit, Mich., a corporation
of Michigan

No Drawing. Application August 2, 1940,
Serial No. 350,158

3 Claims. (Cl. 200-166)

This invention relates to electrical contacts for automatic electric circuit breakers and more particularly to contacts of a silver-tungsten base having substantially non-welding characteristics.

In the use of this type of contact in the past, it has been noticed that the contact resistance between the cooperating contacts would increase under certain conditions, particularly that of operation under load. This adversely affected the use of the contacts, since the resistance increase and the heating incident thereto might reach prohibitive values. On the other hand, this type of contact is highly desirable due to its non-welding characteristics and also due to its permanency in the action of the electric arc which, in the case of the automatic circuit breakers, is extremely severe in view of the heavy short circuit currents which it is necessary to interrupt.

It is the object of this invention to provide cooperating contacts for an electric circuit breaker having a silver-tungsten base and whose contact resistance remains within allowable values even after the device is operated a great many times under load conditions.

Another object of the invention is a provision of a new electric contact of a silver-tungsten base.

Other objects and features of the invention will be readily apparent to those skilled in the art from the following specification:

The contacts according to the present invention having a silver-tungsten base may be formed either from a mixture of the powdered materials which is pressed together to form the solid contact, or a porous block of tungsten may be impregnated with molten silver. Both of these methods of forming the contacts are well known in the art and form no part of the present invention. The proportions of the silver and tungsten in the contacts may be greatly varied. Percentages given for example only being silver 35% to 55% and tungsten 45% to 65% by weight, it being understood that in a mechanical mixture of this type the proportions of the elements are not critical and may be greatly varied for the different operating conditions which may be encountered.

According to the present invention, the circuit breaker is equipped with a pair of cooperating

contacts, one of which is formed of silver and tungsten without appreciable proportion of carbon in any form. The cooperating contact, however, is formed with approximately 1% by weight of carbon, preferably in the form of graphite. It has been found that when two cooperating silver-tungsten contacts are used, one of which is provided with approximately 1% of carbon and the other of which is without appreciable carbon, that the contact resistance remains within allowable values in the operation of the breaker and the other desirable features of non-welding and resistance to the action of the arc are maintained.

It is to be understood that the proportion of carbon in the one contact is again present mainly in the form of a mechanical mixture and that while this percentage appears to give the best result, the exact percentage is not absolutely critical but may be slightly varied within the desires of the user.

While certain preferred embodiments of this invention have been specifically disclosed, it is understood that the invention is not limited thereto, as many variations will be readily apparent to those skilled in the art and the invention is to be given its broadest possible interpretation within the terms of the following claims:

What is claimed is:

1. In an automatic electric circuit breaker, cooperating contacts, one of which is formed of silver and tungsten with approximately 1% carbon and the other of which is formed of silver and tungsten without appreciable carbon present.

2. In an automatic electric circuit breaker, cooperating contacts, one of said contacts being formed of silver 35% to 55%, tungsten 45% to 65%, and carbon approximately 1% with the other of said contacts being formed of silver 35% to 55%, tungsten 45% to 65% but with substantially no carbon.

3. In an automatic electric circuit breaker, cooperating contacts, one of which is formed of silver and tungsten with a minor but appreciable percentage of carbon, and the other of which is formed of silver and tungsten without appreciable carbon present.

JOHN G. JACKSON.