

[54] METHOD OF MANUFACTURE OF
ELECTRIC CONTACTS

[76] Inventors: **Andrei Alexandrovich Knyazhev**,
ulitsa Olginoskaya , 1/8, kv. 36;
Tamara Ignatievna Avdeeva,
Grazhdansky prospekt 110, korpus
4, kv. 246; **Ninel Isaevna Shapiro**,
ulitsa Karpinskogo, 36, korpus 1,
kv. 100; **Ekaterina Mikhailovna
Baikova**, Lermontovsky prospekt,
37, kv. 7, all of Leningrad, U.S.S.R.

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Primary Examiner—Cameron K. Weiffenbach
Attorney, Agent, or Firm—Waters, Roditi, Schwartz &
Nissen

[57] **ABSTRACT**

A method for manufacturing electric contacts for carbon varnish filament microresistors consisting of coating the carbon varnish coating on the microresistor with a layer of a current-conducting paste containing a binder and having flux properties, thereafter, said paste is fired at a temperature which does not cause destruction of the organic compound of the carbon varnish coating, then a flux is applied onto the layer of said paste and the fluxed portions are tinned.
The paste comprises a compound including an organic binder based on glyptal resins and finely-dispersed silver having a weight ratio of 1:24.

3 Claims, No Drawings

METHOD OF MANUFACTURE OF ELECTRIC CONTACTS

The present invention relates to electronic instruments engineering and, more particularly, it relates to methods of making electric contacts of carbon varnish filament microresistors used in the process of manufacture of various small-size instruments.

BACKGROUND OF THE INVENTION

Widely known in the art is a method of manufacture of electric contacts of carbon varnish filament microresistors by applying them onto the carbon varnish coating of a microresistor. In this case the contacts are made of a current-conducting compound of the current-conducting cement type. The microresistors with contacts of current-conducting cement can be mounted only with glueing them by the same current-conducting cement compound and cannot be soldered since the current-conducting cement cannot be tinned, and this limits the field of application of such contacts.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a method for manufacturing electric contacts of carbon varnish filament microresistors free from the above-mentioned disadvantages.

The main object of the invention is to provide such a method of manufacture of electric contacts of carbon varnish filament microresistors which can be used for producing a contact capable of being tinned and providing for mounting of such contacts by means of soldering or welding operations.

This object is attained by providing a method of making electric contacts of carbon varnish filament microresistors, in which, according to the invention, there is applied onto the carbon varnish coating in the locations of the contacts a layer of current-conducting paste having a binder base and featuring fluxing properties, which paste is then fired at a temperature causing no destruction of the carbon varnish coating, then a flux is applied onto the paste layer and the fluxed portions are tinned.

The paste is preferably applied in bands around a continuously moving thread filament with a carbon varnish coating, which after tinning is preferably cut into lengths through the line in the middle of the bands.

The paste is preferably composed of an organic binder based on glyptal resins and finely-dispersed silver in a weight ratio of 1:24.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

The invention will be apparent from the following detailed description of an example of carrying the proposed method into effect.

Onto a continuously moving wound glass filament serving as the base of the microresistor, on which there has been previously applied a carbon varnish resistive coating based on teraphthalic resins, are supplied bands of current-conducting paste consisting of an organic binder based on glyptal resins and finely-dispersed silver in a weight ratio of 1:24 respectively, in the places where contacts are desired.

The current-conducting paste must meet two basic requirements:

1. to form a strong bond with a resistive carbon varnish film which is obtained by a chemical reaction between the paste material and the resistive film;

2. to be capable of being tinned, which operation is provided by the fluxing properties of glyptal resins.

The paste may have the following composition:

10	finely-dispersed silver	100 parts by weight
	glyptal resin	10 parts by weight
	dibutyl phthalate	16 parts by weight
	solvent: xylol and turpentine in ratio, respectively, 0.4 ml	
15	per 1 g of finely-dispersed silver	1 : 10

The bands of the current-conducting paste are fired at a temperature of 280°–300°C during 30–60 seconds.

After that an alcohol-rosin or salicyclic acid-in-glycerine flux is applied and the fluxed portions are tinned during 3–5 hours with a lead-tin compound with low-melting additives, for example, cadmium, at a temperature of 140°–180°C.

The temperature of firing the paste and the temperature of tinning must be much lower than the temperature of polymerization of the resistive coating and this is a necessary condition for maintaining a constant value of resistance of this coating.

After tinning the filament is cut into lengths in the middle of each band thus obtaining microresistors with tinned contacts at each end.

The proposed method is advantageous in that it allows one to make tinned contacts of microresistors which then can be mounted by means of welding or soldering operations.

The proposed method of manufacture of resistors with tinned contacts in the form of bands can be fully automated.

We claim:

1. A method of manufacture of electric contacts for carbon varnish coated filament microresistors, said method comprising the step of applying onto the carbon varnish coating of the microresistor a layer of paste having fluxing properties, said paste comprising an organic binder based on glyptal resins and a finely-dispersed silver; then firing said paste at a temperature causing no destruction of the organic compound of the carbon varnish coating; thereafter, applying a flux onto the layer of said paste and tinning the fluxed portions.

2. A method of manufacture of electric contacts of carbon varnish coated filament microresistors as claimed in claim 1, in which said paste is applied as bands around a continuously moving filament having a carbon varnish coating, followed by tinning said bands and cutting the filament into portions in the middle of said bands.

3. A method of manufacture of electric contacts of carbon varnish coated filament microresistors as claimed in claim 1, in which the paste applied onto the carbon varnish coating contains an organic binder based on glyptal resins and finely-dispersed silver in a weight ratio of 1 : 24.

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