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UNITED STATES PATENT OFFICE.

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ALLOY FOR ELECTRICAL CONTACTS.

No Drawing.

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To all whom it may concern:

Be it known that I, LELAND A. GARDNER, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain Improvements in Alloys for Electrical Contacts, of which the following is a specification.

This invention relates to electrical contacts, and more particularly to metallic compositions or alloys adapted to form improved contacts for electrical instruments.

An object of the invention is to provide a contact for electrical instruments which shall require a minimum cost for its manufacture and maintenance, and which shall possess a high degree of efficiency in operation and length of service.

Considerable difficulty has been experienced in the use of alloys for electrical contacts due to sparking at the contact points. These alloys have been composed of precious metals having a hard surface and high melting point. The sparking eventually causes sufficient material to be transferred from one contact to an opposite contact, thereby closing the gap between the contacts, or produces erosion or wasting away of the contacts, so that the electrical instrument becomes inoperative after a comparatively short length of service. The contact material to be presently described eliminates these undesirable features and provides a ductile, malleable and substantially homogeneous composition of high density consisting of a precious metal and one or more base metals. By the use of this ductile and malleable composition, a greater cohesion between the particles thereof is provided so that erosion, wasting away or the flaking off of minute particles caused by the continuous sparking at the contacts, as is the case in other compositions which are of hard and refractory material, is eliminated.

The preferred composition of the contact material of this invention consists of the following metals and their approximate proportions: 75% fine gold; 17% nickel; 5% zinc; and 3% copper. For example, I have found that the following proportions give good results: 75% fine gold; 16.7%

nickel; 5.34% zinc; and 2.96% copper. These metals may be fused and thoroughly mixed together in a suitable crucible after which the resulting alloy may be drawn or hammered cold and soldered to the contact forming element in a well understood manner. Thus the expensive method of applying the contact material by electro-welding, which is necessary when hard metals are used for this purpose, is eliminated.

While the above materials have been used in substantially the same combination and proportion as outlined above to provide an alloy commercially known as "white gold," the use of such material for the purpose of forming contacts for electrical instruments constitutes a very important advance in providing contacts possessing the characteristics previously recited.

What is claimed is:

1. As an electric contact material consisting of a major part of fine gold, a lesser part of nickel, a still lesser part of zinc, and a small quantity of copper.

2. A contact point for an electrical switching device comprising approximately 75% fine gold; 16.7% nickel; 5.34% zinc; and 2.96% copper.

3. As an electric contact material, a composition of matter comprising approximately 75% fine gold; 16.7% nickel; 5.34% zinc; and 2.96% copper.

4. As an electric contact material consisting of a ductile and malleable composition of high density comprising approximately 75% fine gold; 16.7% nickel; 5.34% zinc; and 2.96% copper.

5. As an electric contact material consisting of a ductile and malleable composition having great cohesion between its particles and adapted to withstand erosion, wasting away and flaking off of minutes particles caused by continuous sparking, comprising approximately 75% fine gold; 16.7% nickel; 5.34% zinc; and 2.96% copper.

In testimony whereof, I have signed my name to this specification this 18th day of February, 1924.

LELAND A. GARDNER.