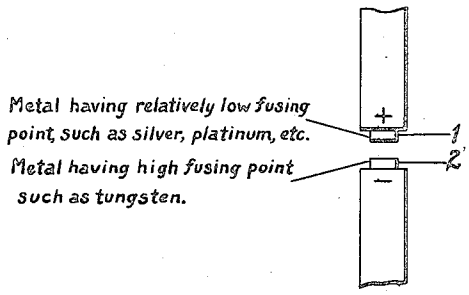
H. V. S. TAYLOR.

ELECTRICAL CONTACT MEMBERS.

APPLICATION FILED JAN. 21, 1916.

1,232,624. Patented July 10, 1917.



WITNESSES:

R. J. Fitzgerald

E. E. Hynes

INVENTOR

Horace V. S. Taylor.

BY

Wesley R. Carr

ATTORNEY

UNITED STATES PATENT OFFICE.

HORACE V. S. TAYLOR, OF PITTSBURGH, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRICAL CONTACT MEMBERS.

1,232,624. Specification of Letters Patent. Patented July 10, 1917.

Application filed January 21, 1916. Serial No. 73,494.

To all whom it may concern:

Be it known that I, HORACE V. S. TAYLOR, a citizen of the United States, and a resident of Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Electrical Contact Members, of which the following is a specification.

My invention relates to contact members that are adapted for use in relays, regulators, switches and similar apparatus, and it has for its object to provide a pair of coöperating contact members that shall be comparatively inexpensive, durable, not subject to pitting or burning and consequent roughening during operation or to sticking or fusing together, and the surfaces of which shall remain clean and free from oxid or other insulating coatings or films, insuring the making of good contact when the members are brought into engagement.

Many attempts have heretofore been made to provide a suitable inexpensive substitute for platinum and iridium for the engaging faces of the make-and-break contact members of relays, regulators and similar devices, tungsten and molybdenum, among other materials, having been proposed because of their high fusing points. However, tungsten and molybdenum are readily oxidizable and their oxids are non-conductors. Consequently, when both members are composed of tungsten or molybdenum, a film of oxid forms upon the member constituting the anode and prevents, or interferes with, the making of reliable and effective electrical contact between the members. It has also been proposed to employ silver for both of the contact members, but it has been found that, when such members are subjected to severe service, the member constituting the cathode is apt to pit badly and to become rough because of the relatively low fusing point of silver.

According to my invention, which is illustrated in the single figure of the accompanying drawing, the anode 1 is composed of silver, platinum or iridium, or some other precious or noble metal that does not oxidize readily or the oxid of which is a reasonably good conductor, and the cathode 2 is composed of tungsten or molybdenum or some other metal that has a high fusing point. If silver is employed as the anode in this arrangement, the tendency to form an oxid film upon the silver is of but little consequence for the reason that the oxid is a reasonably good conductor, and if platinum or iridium is employed, the anode surface does not readily oxidize. Where the service to which the contact members is subjected is not extremely severe, silver is preferably employed for the anode surface because it is less expensive than platinum and iridium, but for the most severe service, platinum or iridium is preferably employed. The cathode does not pit or burn easily because of the very high fusing point of tungsten, and it, therefore, remains clean and smooth.

The members also do not become fused or stuck together because the fusing points of tungsten and molybdenum are above those of the other metals which volatilize and disappear, if the temperature becomes excessive, before the former metals reach the fusing point. This is especially true of the combination of silver and tungsten.

The combination herein set forth has been found very effective and reliable and much less expensive than when platinum or iridium is used for both contact members. The contact resistance is low and the contact members do not become insulated from each other.

While it is preferable to employ tungsten or molybdenum as the cathode and the other metal as the anode, the relations may in many cases be reversed with very satisfactory results, as, for instance, in the interrupter of ignition apparatus.

I claim as my invention:

1. A pair of coöperating make-and-break contact members one of which is composed of a metal of the tungsten group and the other of which is composed of another metal.

2. A pair of coöperating make-and-break contact members the cathode of which is composed of a metal of the tungsten group and the anode of which is composed of another metal.

3. A pair of coöperating make-and-break contact members one of which is composed of a metal of the tungsten group and the other of which is composed of a metal that does not become readily oxidized.

4. A pair of coöperating make-and-break contact members the cathode of which is composed of a metal of a tungsten group and the anode of which is composed of a metal that does not become readily oxidized.

5. A pair of coöperating make-and-break contact members one of which is composed of metal of the tungsten group and the other of which is composed of a precious metal.

6. A pair of coöperating contact members one of which is composed of silver and the other of tungsten.

7. A pair of coöperating contact members, the anode of which is composed of silver and the cathode of tungsten.

In testimony whereof, I have hereunto subscribed my name this 31st day of Dec., 1915.

HORACE V. S. TAYLOR.