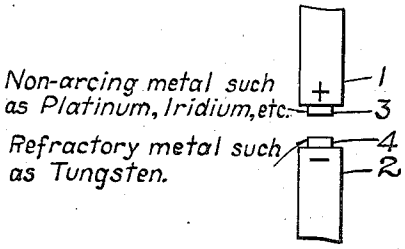
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ELECTRICAL CONTACT MEMBERS.

APPLICATION FILED AUG. 30, 1916.

1,232,625. Patented July 10, 1917.



WITNESSES:

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ELECTRICAL CONTACT MEMBERS.

1,232,625. Specification of Letters Patent. Patented July 10, 1917.

Original application filed January 21, 1916, Serial No. 73,494. Divided and this application filed August 30, 1916. Serial No. 117,668.

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, this application being a division of application Serial No. 73,494, filed January 21, 1916.

My invention relates to contact members adapted for use in electrical apparatus such as relays, regulators, switches and the like, and it has for its object to provide a pair of coöperating contact members that shall be durable and comparatively inexpensive, and which, in operation, shall not be subjected to pitting or burning and consequent roughening. It is also my object to provide coöperating contact members which will not stick or fuse together during their operation and which shall remain clean and free from surface oxidation and from other insulating coatings and films, whereby good contact is insured when the members are brought into engagement.

Make and break contact members for relays, regulators and similar devices have heretofore been commonly made of platinum, iridium, platinum-iridium alloys and other metals of the platinum type. These metals make very satisfactory contact members, but on account of their high cost, many attempts have been made to provide a suitable inexpensive substitute. Refractory metals of the type of tungsten and molybdenum have been proposed for this purpose but have not been found satisfactory for use in coöperating pairs because these metals are readily oxidizable under the conditions encountered in the use of make and break contact members and their oxids are non-conductors of electricity. Consequently, when both contact members of a coöperating pair 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 and its inherent tendency to produce arcs.

In my copending application for Letters Patent, filed January 21, 1916, Serial No. 73,494, of which the present application is a division, I have described and claimed a means for avoiding all of the above-indicated difficulties by the use of a pair of contact members, one of which has an active working face of tungsten, molybdenum or some other metal having a high fusing point, while the other member is composed of silver, platinum, iridium or some other precious or noble metal that does not oxidize readily, or the oxid of which is a reasonably good conductor of electricity.

The present application is directed to the specific modification of my invention, according to which a contact member of tungsten, molybdenum or an equivalent refractory metal is used in coöperation with a metal of the platinum type.

The single figure of the accompanying drawing is illustrative of my invention and shows a coöperating pair of contact members 1 and 2 of which the anode 1 is provided with an active working face 3 of platinum, iridium, platinum-iridium alloy or the like, while the cathode 2 is provided with an active working face 4 of refractory metal of the tungsten type which may be either tungsten, molybdenum or other equivalent metal.

The use of platinum anode contact members instead of the silver anodes specifically claimed in my above-mentioned copending application is sometimes preferable when the contact members are to be subjected to severe service or where non-arcing contact metals are required. For example, in interrupters for the ignition apparatus of internal combustion engines, it is important that arcing be avoided and it is impracticable to make use of arc-suppressing shunt connections or similar devices. Under such circumstances, I prefer to employ platinum anodes in spite of the greater cost of platinum as compared with silver.

The combination herein set forth has been found to be very effective and reliable and it is obviously 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.

In general, it is preferable to employ tungsten or molybdenum as the cathode, and the platinum, iridium or other non-arcing material as the anode. The relations may, however, be reversed with satisfactory results in some cases, for example, in the interrupters of ignition apparatus.

In the appended claims, the expression "metal of the platinum type" is intended to include not only platinum itself, but iridium, platinum-iridium alloys, osmium, and other chemically inert and non-arcing metals which may be substituted for platinum in the contact members herein described. The expression "refractory metal of the tungsten type" is intended to include tungsten, molybdenum, and such other refractory metals as may be substituted therefor in coöperation with platinum to produce effective pairs of contact members. I desire that the claims be construed to cover these and all other modifications which fall fairly within their scope.

I claim as my invention:

1. A pair of coöperating contact members, the active working faces of which are composed, respectively, of metal of the platinum type and of refractory metal of the tungsten type.

2. A pair of coöperating contact members comprising an anode having an active working face of metal of the platinum type and a cathode having an active working face of refractory metal of the tungsten type.

3. A pair of coöperating contact members, the active working faces of which are composed, respectively, of platinum and of a refractory metal of the tungsten type.

4. A pair of coöperating contact members comprising an anode having an active working face of platinum and a cathode having an active working face composed of a refractory metal of the tungsten type.

5. A pair of coöperating contact members, the active working faces of which are composed, respectively, of platinum and of tungsten.

6. A pair of coöperating contact members comprising an anode having an active working face of platinum and a cathode having an active working face of tungsten.

7. A pair of mated vibratory contacts, one of tungsten and the other of platinum.

In testimony whereof, I have hereunto subscribed my name this 26th day of Aug., 1916.

HORACE V. S. TAYLOR.