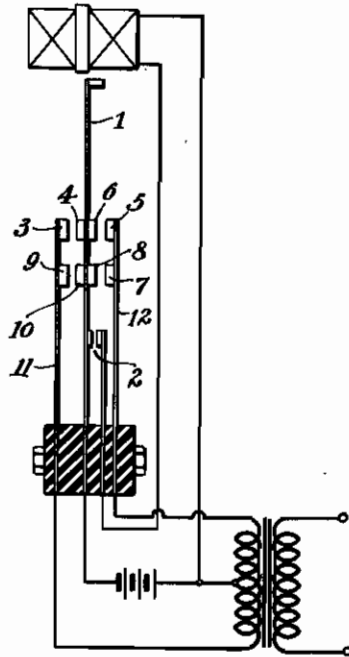


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# ALIEN PROPERTY CUSTODIAN

## VIBRATORY SYSTEM

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Alien Property Custodian

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Contacts operated at high rates of speed of the kind used principally in vibrators, that is, vibratory inverters and rectifiers or choppers, two properties are extremely desirable, namely, high conducting power and high thermal stability of the contact. These two properties cannot be combined and united in practice since a material having a high electric conductivity and possessing at the same time when used as a contact pole a low contact resistance at the contact point proper (as a result of the high conductivity of the oxide skins or films etc. forming on the surface) as is true, for instance, of silver, has a very low thermal stability or refractoriness, while, inversely, a material having high thermal stability or refractoriness such as tungsten carbide has both, inherently, a high resistance as well as when employed as a contact a high contact resistance.

Now, according to the invention two paralleled and jointly actuatable contacts are employed. One of these contacts is built from the viewpoint to insure a high electrical conductivity and/or contact conductivity (or low contact resistance), while the other contact is designed from the viewpoint to insure and possess a high temperature or thermal stability or refractoriness.

An exemplified embodiment of the invention is shown in the drawing as applied to a vibrator or vibratory make and break. The vibrating spring, blade or reed 1 of the device, in addition to the exciting contact 2, carries upon each face contact poles 4, 6, 8 and 10. Each of the two cooperative springs 11 and 12, in turn, supports two contact poles 3 and 9, and 5 and 7 respectively. Of these contact poles, those poles which cooperate with one another, that is, 3, 4, 6 and 8 consist of sintered or concreted tungsten carbide optionally with a very small admixture of nickel or the like to act as a binding or bonding means, or the like. The other contact poles which cooperate, that is, 7, 9, 9 and 10 are made of pure silver or else a silver-tungsten or silver-palladium alloy.

While the inter-contact distances or gaps originally are equal, a marked wear and tear of the silver contacts will first be noticeable in actual operation of the device. As a consequence, the inter-contact distance and thus the

opening times of the silver contacts will grow. The result in practice is that first the tungsten contacts and only slightly later the silver contacts are closed, while, inversely, first the silver contacts and then only the tungsten contacts will be opened. In other words, the work of opening and closing of the working circuit practically speaking is carried only by the tungsten contacts with the result that no sparking will happen at the silver contacts, thus precluding the chance of additional wear and tear. The silver contacts, on the other hand, during the major part of the closing period, will take care chiefly of the conduction of the working current so that the aggregate contact resistance of the contact assembly is low, with the result that the contacts will become but little heated as a result of heat dissipated by current flow.

If in the course of time also the gap of the tungsten contacts should diminish as a result of wear, this spontaneously will result in a so much faster increase in the distance between the silver contacts. In other words, the conditions before described will always be restored automatically, as it were.

In lieu of the silver contacts, recourse could be had also to other rare metal contacts, say, gold or platinum contacts. In certain circumstances it may also suffice to use in lieu of platinum contact poles of some other metal which are coated or plated with tenuous contact platelets of platinum (platinizing) instead of contact poles made of solid platinum. To be sure, the thickness of this platinum plating must be so heavy that even after an initially stronger wear and tear by heat action, a little platinum will be left; or else the contact spacing from the outset must be chosen so much greater than the contact spacing of those contacts which have been designed for greater temperature stability or refractoriness that sparks will be produced only at the latter contacts.

The contact possessing great thermal stability could also be made of a metal possessing a higher fusion temperature such as tungsten or palladium instead of consisting of a hard metal carbide.

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