Aug. 18, 1931. T. KOBAYAKAWA 1,819,248

ELECTRICAL CONTACT DEVICE

Filed May 31, 1930

Fig.1.

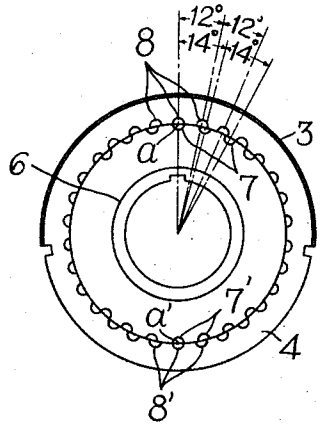


Fig.2.

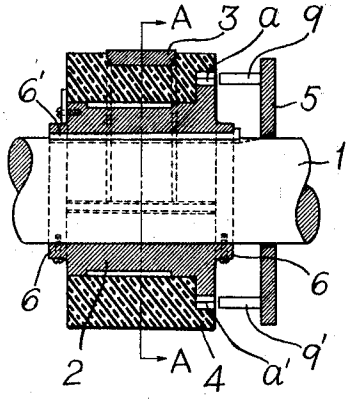
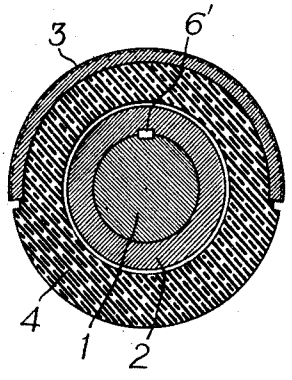


Fig.3.



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UNITED STATES PATENT OFFICE

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ELECTRICAL CONTACT DEVICE

Application filed May 31, 1930, Serial No. 458,111, and in Japan July 9, 1929.

My invention relates generally to improvements in electrical contact devices and particularly to contact drums with adjustable contact members.

One object of my invention is to provide a contact drum with a contact member having wide variations in the positioning thereof with respect to the drum shaft.

Another object of my invention is to obtain a contact drum having its contact member minutely adjustable in its angular position on the drum shaft.

Another object of my invention is to provide means for readily and accurately varying the angular disposition of a contact member on a shaft carrying the same.

A further object of my invention is to enable relatively continuous variation of the phase position of one body with respect to another.

Other objects of the invention will, in part, be obvious and, in part, appear hereinafter.

The invention, accordingly, is disclosed in the accompanying drawings and comprises the features of construction, combination of elements and arrangement of parts which will be exemplified in the structure hereinafter set forth, and the scope of the application of which will be indicated in the appended claims.

For a fuller understanding of the objects of the invention, reference may be had to the following detailed description, taken in connection with the accompanying drawings, in which;

Fig. 1 is an end elevation of a contact drum embodying my invention.

Fig. 2 is a longitudinal vertical section showing the contact drum in Fig. 1, with a rotatable shaft carrying the same.

Fig. 3 is a transversal section taken along the line A—A in Fig. 2.

Referring to the drawings, the device shown comprises, in general, a shaft 1 rotatably supported in suitable bearings, not shown, a hub 2 carried on and keyed to the rotatable shaft 1, a cylindrical member 4 of insulating material operatively fitting on the hub 2 and having an electrical contact member 3 secured thereto along the outer periphery, and a connecting member 5.

The hub 2 is secured to the shaft 1 by suitable means. In the illustration, the hub is prevented from axial movement by integral annular projections 6 and set screws passing therethrough, and from tangential movement by a key 6'.

The cylindrical member 4 may be of bakelite or other phenol condensation products or like moldable insulating material, and the contact member 3 may be embedded therein on the outer periphery thereof. The contact member 3 is of segmental shape and extends along a portion of the outer periphery of the insulating cylinder 4. It will be understood that the member 3 cooperates with suitable fixed contact members, not shown, and constitute an electrical contact device therewith.

The cylinder 4 has a slidable fit with the outer peripheral surface of the hub 2. The cooperating surfaces of the hub 2 and the cylinder 4 are respectively provided at one side with a plurality of semi-circular recesses 7, 7' and 8, 8'. Each recess 7 or 7' can form a complete circular hole in cooperation with each recess 8 or 8', in which circular hole a locking pin 9 or 9' can fit snugly. The pins 9 and 9' are axially projecting from and secured to the connecting member 5, preferably at diametrically opposite sides of the member 5, and when inserted into the above-mentioned circular hole formed by recesses 7 and 8, and 7' and 8', respectively, they lock the cylinder 4 with the hub 2.

The arrangement of the recesses 7, 7' and 8, 8' is such that the recesses 7, 7' are spaced from each other by an equal angular distance, for example by 14 degrees, while the recesses 8, 8' are spaced from each other by an equal angular distance slightly different from the former, for example by 12 degrees.

The connecting member 5 is loosely mounted on the shaft 1, and movable tangentially as well as axially on the shaft.

Assume, for example, that the parts take a position shown in Fig. 1, and the locking pins 9, 9' are inserted into the circular holes

a, a' formed by one of the recesses 8, 8′ and each of middle ones of the recesses 7, 7′. The contact segment 3 is then locked in a definite angular position on the shaft 1. When the pins 9, 9′ are removed from the holes a, a', and the cylinder 4 is slightly rotated on the hub 2 until the recesses 7, 7′ next to the middle ones and adjacent ones of the recesses 8, 8′ register with each other, respectively, and the pins 9, 9′ are inserted into the new holes thus formed, the contact segment 3 is locked on the shaft 1, in another angular position different from the first mentioned position by 2 degrees that is the difference between the spacings in the respective series of the recesses 7 and 8.

Thus, it will be obvious that the angular position of the contact segment 3 on the hub 2 and shaft 1 can be varied by a plurality of steps of a minute angle which is the difference between the spacings of the recesses 7, 7′ and 8, 8′, and in the example shown, the difference is 2 degrees.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

Electrical contact device having a contact drum comprising a rotatable shaft, a hub member secured on said shaft and provided with a plurality of recesses definitely arranged on the outer periphery thereof, a cylindrical member mounted on said hub member and provided with a plurality of recesses definitely arranged on the inner periphery thereof at one side, the arrangement of the second-mentioned recesses being different from that of the first-mentioned recesses, a contact member secured on the outer periphery of said cylindrical member, and a connecting member mounted on said shaft and movable thereon both tangentially and axially and provided with projecting pins adapted to be inserted into one or more of said recesses simultaneously.

In testimony whereof I affix my signature.

TOKIO KOBAYAKAWA.