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O. CONRADTY

2,338,409

CONNECTION FOR CARBON SEGMENTS OF COLLECTORS

Filed Sept. 4, 1940

Fig. 1.

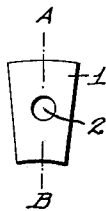


Fig. 2.

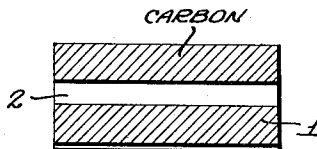


Fig. 3.

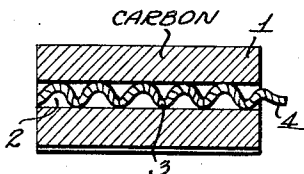


Fig. 4.

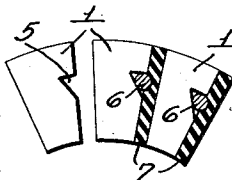


Fig. 6.

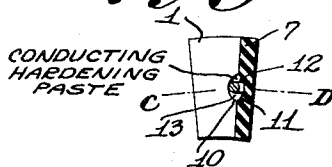


Fig. 5.

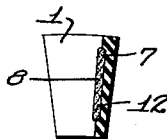
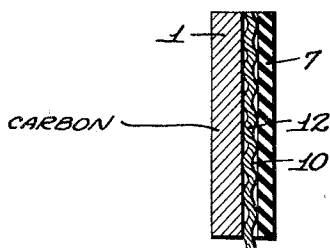


Fig. 7.



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UNITED STATES PATENT OFFICE

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CONNECTION FOR CARBON SEGMENTS OF COLLECTORS

Ottmar Conradty, Rothenbach-on-the-Pegnitz,
Germany; vested in the Allen Property Custodian

Application September 4, 1940, Serial No. 355,391
In Germany September 25, 1939

1 Claim. (Cl. 171-320)

This invention relates to a connection for carbon segments of electric collectors.

It is an object of the present invention to provide simple and reliable means for applying to the carbon segments a metal terminal to which the wire ends of the rotor may be soldered.

With this and further objects in view, as may become apparent from the within disclosures, the invention consists not only in the structures herein pointed out and illustrated by the drawing, but includes further structures coming within the scope of what hereinafter may be claimed.

The character of the invention, however, may be best understood by reference to certain of its structural forms, as illustrated by the accompanying drawing in which

Fig. 1 is an end view of a carbon segment having the invention applied thereto.

Fig. 2 is a section on line A-B of Fig. 1.

Fig. 3 is a section similar to Fig. 2, but including the connecting wire.

Fig. 4 is an end view of a plurality of modified segments.

Fig. 5 is an end view of a further modification.

Fig. 6 is an end view of another modification.

Fig. 7 is a section on line C-D of Fig. 6.

Similar characters of reference denote similar parts in the different views.

Referring now to the drawing in greater detail, and first to Figs. 1, 2 and 3, it will be noted that the segment 1, consisting of carbon, more particularly of artificial carbon material, and forming part of a collector or commutator for electric machines, is provided with a longitudinally extending bore 2 of uniform section by a boring, drilling or pressing operation. For example, the bore may be made in the segment as the same is pressed in a rod extrusion or bar pressing process. Now a length of wire 3 which is substantially thinner than the diameter of the bore, may be introduced into the same, but owing to its loose mechanical contact with the walls of the bore no reliable electrical contact would be established. In order to ensure a safe electrical contact, the wire is passed through the bore to project from the opposite end thereof by an amount corresponding to the length of the carbon segment and the projecting end is then corrugated by means of a suitable device of obvious construction. The corrugated length of wire is then withdrawn to engage resiliently the walls of the bore, as shown in Fig. 3, whereby a safe contact is established, in a similar manner as with the carbon rods for arc lamps formerly in use. The projecting portion of wire 4 serves

for forming the connection to the windings or coils of the rotor of the electric machine and may be left in wire form or stamped to the form of a flat lug.

Where the carbon segments are pressed singly, it may be difficult to apply a bore therein, if its length exceeds a certain amount. In this case, a groove 5, preferably shaped as shown in Fig. 4, may be included in one of the side faces of the segment, for reception of a length of wire 6 which is inserted into this groove before the segments are assembled into a collector, and forced into the same by the intermediate insulating layers 7, Fig. 4. Corrugation of the wire 6 is not required if the same is made to project slightly from the groove. By way of alternative, strips of metal foils or metal fabric 12, Fig. 5, may be provided in a larger groove 8, the depth of which should be slightly smaller than the metal insert 12.

According to a further modification, illustrated in Figs. 6 and 7, the carbon segments 1, which are grooved at 10 as shown, may be first assembled into a complete collector, together with the intermediate insulating layers 7 which are formed with a similar groove 11, while the connecting wires 12 are then passed through the groove 10, 11, corrugated as described with reference to Fig. 3, and withdrawn to engage the groove 10.

It will be appreciated that my invention represents an extremely simple and cheap design for the connection between the segments of the collector and the wire ends of the rotor, which meets all requirements.

In special cases, for instance, where tensions and wedge effects shall be avoided, the corrugation of the wire may be dispensed with, provided that care is taken for the wire to be fixedly seated in the bore or recess, e. g., by means of a conductive hardening paste or cement, as indicated at 13 in Fig. 6.

Generally, copper or bronze will be used as the material for the connecting wires or inserts, but it is also possible to use the so-called "Copal" or similar cheaper alloys consisting, e. g., of copper and aluminium.

The method and apparatus of the present invention have been described in detail with reference to specific embodiments. It is to be understood, however, that the invention is not limited by such specific reference but is broader in scope and capable of other embodiments than those specifically described and illustrated in the drawing.

I claim:

A method of connecting a wire to a carbon segment of the commutator of an electric machine comprising corrugating part of the wire and inserting an uncorrugated part through a bore of uniform section extending through the segment, forcing the corrugated part into the

bore by pulling the uncorrugated part through the bore so that the corrugations in the wire will make contact with the wall of the bore at a plurality of points and the uncorrugated part will remain joined to the corrugated part to form a connector to a machine winding.

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