S. SPARROW.

BRUSH OR COLLECTOR FOR ELECTRICAL MACHINES.

APPLICATION FILED FEB. 23, 1909.

959,634. Patented May 31, 1910.

Fig. 1.

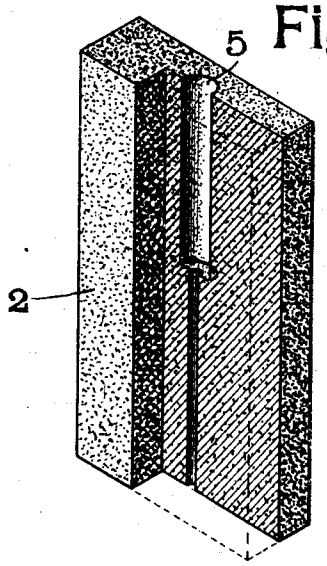


Fig. 2.

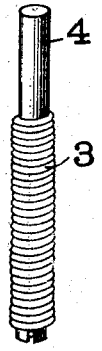


Fig. 3.

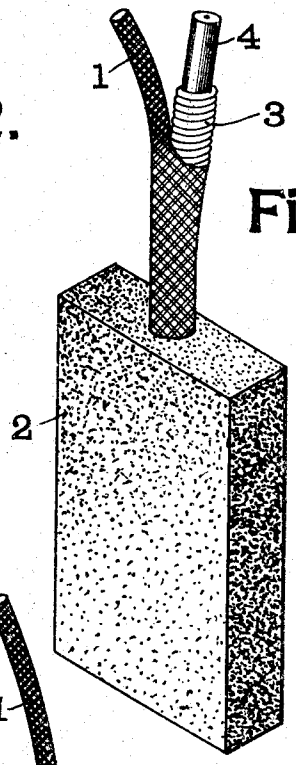


Fig. 4.

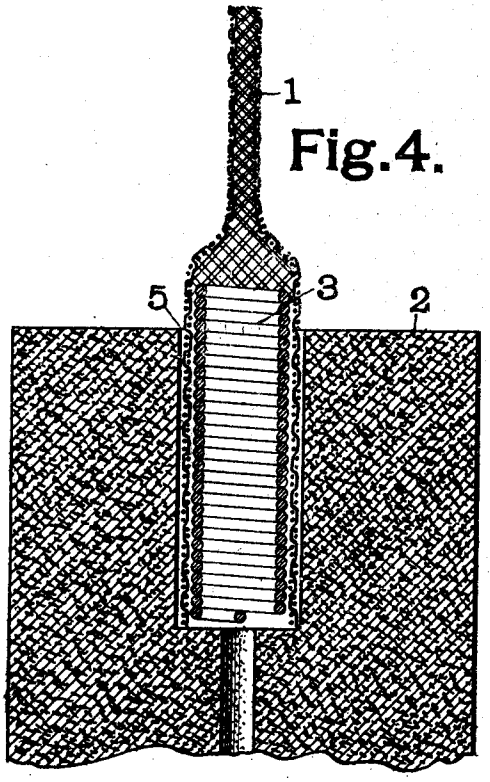
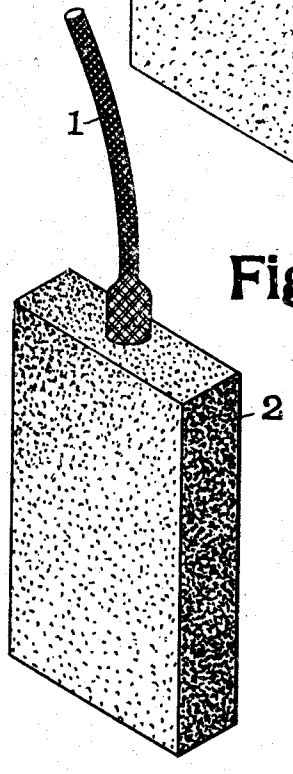


Fig. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

SIMON SPARROW, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WAGNER ELECTRIC MANUFACTURING COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

BRUSH OR COLLECTOR FOR ELECTRICAL MACHINES.

959,634. Specification of Letters Patent. Patented May 31, 1910.

Application filed February 23, 1909. Serial No. 479,466.

To all whom it may concern:

Be it known that I, SIMON SPARROW, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented a certain new and useful Brush or Collector for Electrical Machines, of which the following is such a full, clear, and exact description as will enable any one skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

My invention relates generally to means employed for connecting conductors to the collecting members of electrical machines, but more especially to means for attaching conductors to carbon brushes. The means heretofore in use for this purpose have proven to be unsatisfactory for the reason that the coefficient of expansion of the carbon is larger than that of the metals used for the connecting parts. The result of this is that, should the brush become hot, the screw or rivet by means of which the conductor is attached will be stretched and the contact pressure under normal temperature conditions be thereby either reduced or destroyed. Plug or wedge connections are objectionable for similar reasons, since the hole in the brush into which they are inserted increases in size more rapidly under the influence of heat than the plug or wedge and consequently loosens the contact. Imperfect contacts also tend to become more imperfect on account of the oxidation of the parts by the electric current.

The object of my invention is to provide connecting means which shall be light, give large area of contact, and be adapted to maintain a permanent contact regardless of the expansion or contraction of the parts due to changes in temperature.

In the accompanying drawings which illustrate my invention, Figure 1 shows a brush partly in section provided with a cylindrical hole; Fig. 2 is a perspective view showing a spring wound on a mandrel preparatory to placing it in position; Fig. 3 shows a method of inserting the spring into the conducting cable and then into the brush; Fig. 4 is an enlarged vertical section of the brush and connecting parts; Fig. 5 is an isometric projection of the brush with the conductor attached in accordance with my invention.

In the drawings 2 is a collecting member or brush which may be made of carbon or any other suitable material and may be of any desired shape. A cavity or aperture 5 of any suitable shape, but preferably cylindrical, is formed on any convenient part of the collecting member and may extend entirely through it if desired. A resilient member 3, preferably a helical spring, placed in this cavity together with the conductor 1, holds the conductor in contact with the collecting member. The conductor 1 may be of any suitable construction such as woven, or twisted, or simply an aggregation of separate conductors. In the method of applying my invention, which is shown in the drawings, I wind the spring 3 on a mandrel 4 and holding it under tension insert it into a tubular web conducting cable 1 and then into the cylindrical cavity 5 in the collecting member, as shown in Fig. 2. The spring is then released and the mandrel withdrawn. The cable is thus elastically held in intimate and extended contact with the brush. It will be apparent that the spring when in the position described will carry no appreciable current and will therefore not be heated sufficiently to destroy its elasticity. By this construction I overcome the objections to the methods now in use for making such connections. The spring always adjusts itself to the variations in the size of the hole in the brush and thereby maintains perfect contact. It is light and therefore does not materially increase the inertia of the brush. It is easily placed in position without any danger of breaking the carbon and is inexpensive. My device also has a further advantage in that the connecting cable can be made to extend from the top rather than the side of the brush, thus economizing space on the commutator when desired.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

1. In a brush for dynamo-electric machines, the combination with a collecting member provided with a cavity, of a resilient member under compression situated in said cavity, and a conductor lying between said resilient member and the wall of said cavity.

2. In a brush for dynamo-electric machines, the combination with a collecting member provided with a cavity, of a spring

under compression situated in said cavity, and a conductor lying between said spring and the wall of said cavity.

3. In a brush for dynamo-electric machines, the combination with a collecting member provided with a cylindrical cavity, of a spring under compression situated in said cavity, and a flexible conductor lying between said spring and the wall of said cavity.

4. A carbon brush, having a cylindrical cavity, a web conducting cable, extending into and entirely around the walls of said cavity, and a helical spring under compression within said cable.

In testimony whereof I have hereunto set my hand and affixed my seal in the presence of the two subscribing witnesses.

SIMON SPARROW. [L. S.]

Witnesses:

C. B. BENNETT,

M. L. FRANKLIN.