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ADAPTER FOR MOTOR BRUSH SHUNTS.

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1,415,577. Patented May 9, 1922.

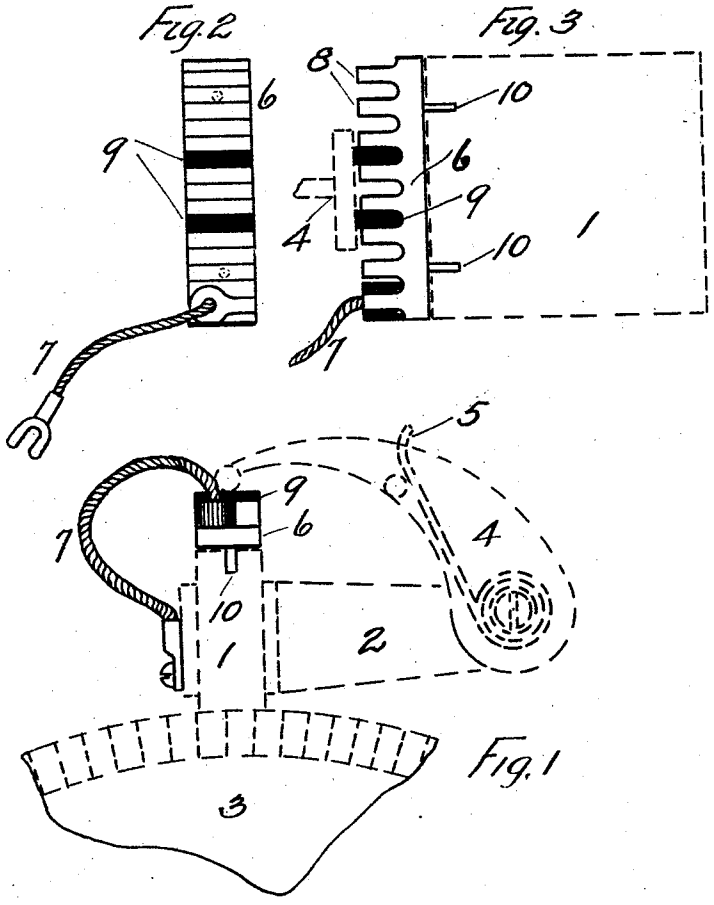


Fig. 1

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UNITED STATES PATENT OFFICE.

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ADAPTER FOR MOTOR-BRUSH SHUNTS.

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Application filed October 12, 1920. Serial No. 416,538.

To all whom it may concern:

Be it known that I, DAVID R. KNAPP, a citizen of the United States, residing in Pottsville, in the county of Schuylkill and State of Pennsylvania, have invented certain new and useful Improvements in Adapters for Motor-Brush Shunts, of which the following is a specification.

My invention relates to that class of devices in which the current to and from the revolving member of an electric motor is transmitted and is accomplished by a brush held in slidable relation to a rigid brush holder, the pressure of the brush on the revolving member being accomplished by a spring actuated trigger forming part of the brush holder.

In the present method there are two distinct forms of transmitting the current from the brush to the holder, viz, one where one end of a flexible shunt is fastened to the brush by some permanent means and the other end secured to the holder by some mechanical means; and the other where the brush is not provided with a shunt and where the current is transmitted to the holder by means of its normal contact therewith.

In the first mentioned method the cost of the shunt is sometimes equal to that of the brush and when the brush is worn out the shunt is destroyed with the brush notwithstanding the fact that it has not deteriorated during the life of the brush, and again a large portion of the brush is made useless by the room required to secure the shunt to the brush, and again it is difficult to maintain a perfect electrical connection where the shunt is attached to the brush on account of the character of the materials, the brush being generally of carbon and the shunt of flexible copper. When this connection becomes loose a portion of the current is transmitted from the brush to the holder by means of the brush trigger and spring. The spring not being designed to carry current, soon becomes weak in tension which results in low brush pressure, thus destroying the brush holder and possibly the electrical apparatus connected therewith.

In the second method where the current is transmitted by normal contact of the brush with the holder, a great portion of this current is transmitted to the holder through the trigger and spring which results in a condition as stated above.

It is the object, therefor, of my invention to overcome these objections, by first; providing a detachable adapter whereby the brush shunt need not be destroyed when the brush is worn out but may be used in place with a new brush; second, to provide a convenient detachable adapter that can be used on brushes that are not now provided with shunts; and third, to provide a means whereby the trigger may be insulated to prevent it from carrying current thereby preventing the destruction of the tension spring.

With these objects in view my invention consists of a certain novel construction as will hereinafter be pointed out in the claims, reference being had to the accompanying drawing forming part thereof and in which Figure 1 is an elevation showing the general arrangement of the brush, the holder, and the adapter, Figure 2 is a plan of the adapter, and Figure 3 is a side elevation of the adapter and the brush therefor.

In said figures similar numerals of reference refer to similar parts throughout the several views and in which the numeral 1 designates a brush adapted to fit snugly in the brush holder 2 and transmit current thereto from the revolving member 3 by slidable relation.

The numeral 4 designates a trigger actuated by the spring 5 and designed to create a pressure on the brush, all of which is well understood by those skilled in the art to which this invention relates.

The numeral 6 designates a metallic member adapted to fit snugly on the top of the brush and to cover approximately the entire upper surface in order to provide as large a contact area as possible.

The numeral 7 designates a shunt secured permanently in rigid relation to the metallic member 6 and in rigid relation with the brush holder 2 which forms an electrical connection between the said member 6 and the holder 2.

The numeral 8 designates a heat radiating means which consists of metallic vanes integral with the member 6.

The numeral 9 designates a means to insulate the member 6 and the trigger 4 at the point of contact and consists of an appro-

priate insulating material firmly wedged between the vanes 8 and extending above a sufficient distance to separate the trigger from the metallic member 6.

The numeral 10 designates a means to hold the brush 1 and the metallic member 6 in alignment and consists of a plurality of pins secured permanently in rigid relation to the under side of the metallic member 6 and adapted to engage with suitable spaced apertures in the brush 1.

Having thus described the various parts throughout the views its mode of operation is substantially as follows:

Current being collected by the brush 1 from the moving element 3 is transmitted from the brush to the metallic member 6 by means of surface contact, thence through the shunt to the holder 2. No current will be transmitted to the holder 2 through the trigger as the point of contact is insulated by means of the insulation 9, thus preserving the function of the spring 5.

After the brush has worn to such an extent as to require renewing, the metallic member is removed from the top of the brush while in place and a new brush inserted in the holder as heretofore. It will be understood that the new brush will be provided with suitable apertures to engage with the pins 10. The foregoing therefor preserves the shunt for further use, prevents the trigger from carrying current and also provides a shunt for brushes that are now not equipped with such, thus accomplishing the objects of my said invention.

I do not wish to limit myself to the exact construction as shown as certain departures can be made therefrom with-out departing from the spirit and intent of my said invention, but what I claim as new and desire to secure by Letters Patent, is:

1. In an adapter for motor brush shunts, the combination with a trigger type brush holder and a brush therefor, of a removable metallic member adapted to cover and fit snugly the entire approximate upper surface of the brush and arranged to enter said holder, means to insulate the said metallic member from the trigger at the point of contact, and a shunt leading from said member and attached to said brush holder to form an electrical connection between said member and said brush holder, substantially as described.

2. The combination with a brush, a holder for supporting said brush for sliding movement relative to said holder, a member formed of conducting material arranged to move said brush into or through said holder, means for removably attaching said member to one end of said brush, insulating material secured to one end of said member, a spring pressed trigger acting through said insulating material to press said member and brush transversely of said holder, and a conductor electrically connecting said member and said holder.

3. The combination with a brush, a holder for supporting said brush for sliding movement relative to said holder, a member formed of conducting material arranged to move with said brush into or through said holder, means including interfitting connections for removably attaching said member to one end of said brush, insulating material secured to one end of said member, a spring pressed trigger acting through said insulating material to press said member and brush transversely of said holder, and a conductor electrically connecting said member and said holder.

4. The combination with a brush, a holder for supporting said brush for sliding movement relative to said holder, a member formed of conducting material arranged to move with said brush into or through said holder, a plurality of cooling vanes formed on said member, means including interfitting connections for removably attaching said member to one end of said brush, insulating material secured to one end of said member, a spring pressed trigger acting through said insulating material to press said member and brush transversely of said holder, and a conductor electrically connecting said member and said holder.

5. The combination with a brush, a holder forming a support and guide for said brush, a member formed of conducting material arranged to seat on one end of said brush and lie within the space formed by the boundary planes of said brush, means including interfitting connections for removably attaching said member to said brush end, a spring pressed trigger arranged to hold said brush in its operative position, and a conductor fixed at one end to said member and removably secured at its other end to said holder, whereby current is shunted around said trigger.

6. As a new article of manufacture, a brush top of conducting material having brush engaging means at one end, an insulated part at the opposite end, and a conductor permanently secured to said top.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DAVID R. KNAPP.

Witnesses:
J. FEEMAN,
MARTIN L. DUNN.