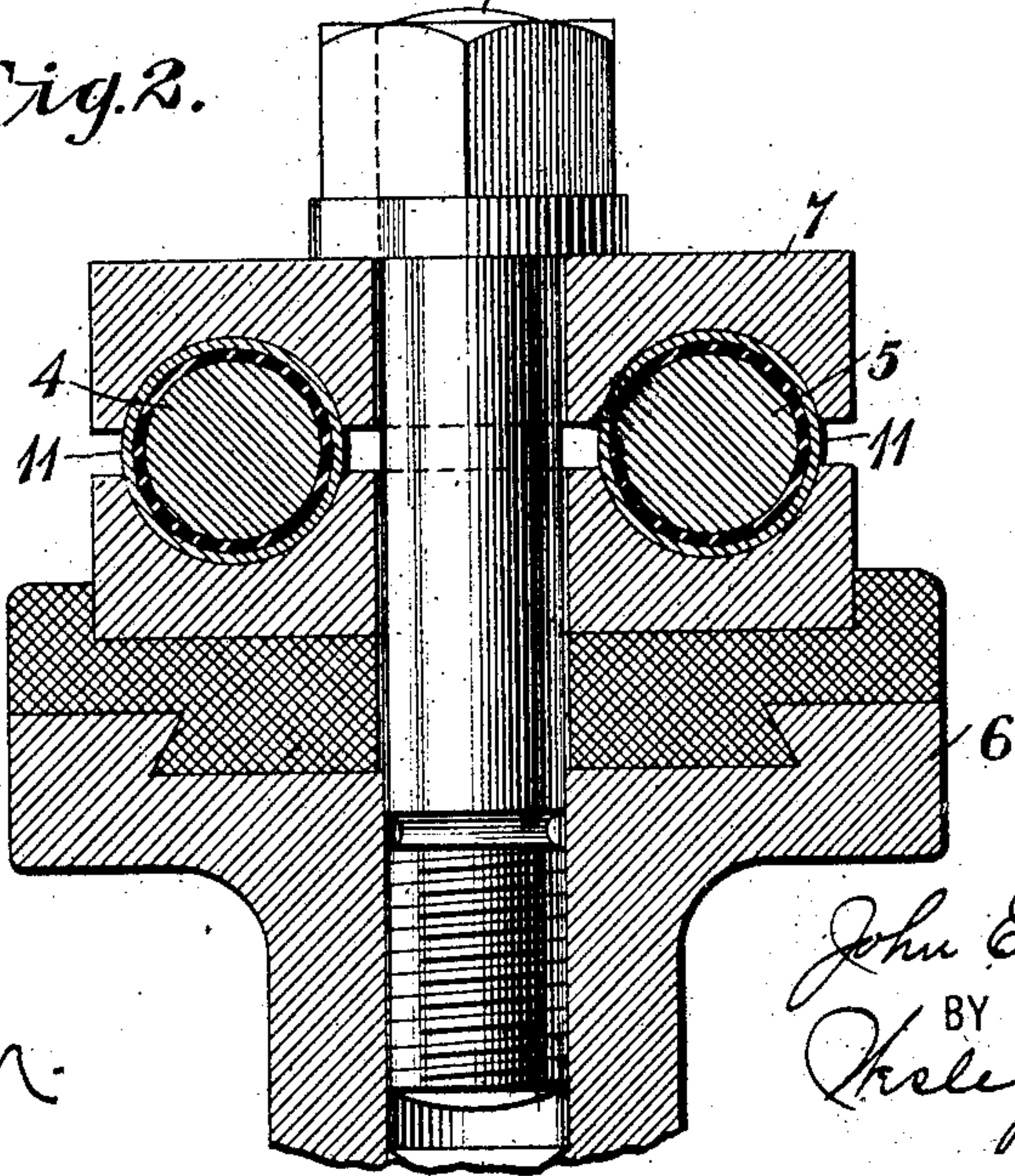


BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.

930,007.

Fig. 2.



Fred H. Miller
Rydeborn.

John E. Webster
BY
Haley E. Carr
ATTORNEY

UNITED STATES PATENT OFFICE.

JOHN E. WEBSTER, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.

No. 930,007.

Specification of Letters Patent.

Patented Aug. 3, 1909.

Application filed January 3, 1906, Serial No. 294,416. Renewed May 19, 1909. Serial No. 497,108.

To all whom it may concern:

Be it known that I, JOHN E. WEBSTER, a citizen of the United States, and a resident of Pittsburg, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Brush-Holders for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to the support and insulation of current-carrying parts for dynamo-electric machines and has special reference to means for insulating and supporting brush holders.

The object of my invention is to provide means of the nature above specified that shall be simple and durable in construction; that shall specially protect and preserve the insulation and that shall permit of proper adjustment of the holder.

As it is often desirable and convenient to support the brush holders of a dynamo-electric machine from some part of the frame, it becomes essential to provide adequate insulation in order to prevent the grounding of the current-carrying parts, and it is usually desirable to so mount the brush holder that a radial adjustment may be effected, relative to the rotating part.

In the prior art, it has been usual, particularly with railway motors, to support the brush holder by an arm or shank of substantially square cross-section so that the holder could be held in position by means of a clamp comprising two V-shaped parts, one of which was rigidly attached to or integral with the portion of the frame from which the holder was supported. In this case, the square arm or shank was covered with a film or wrapping of insulating material, but, on account of variations in the position of the holder, and also by reason of the strains to which the holder was subjected, the insulating wrapping often showed a tendency to crack at the corners or become worn away to such an extent that its insulating qualities were not properly maintained.

In accordance with my present invention, I provide a pair of similar cylindrical arms or shanks which may be readily covered with wrappings of insulating material, such as mica, and for the protection of the insulation from deterioration either by contact with the air or by abrasion against the inner surfaces of the clamp by which the holder is

held in position, sealing tubes of suitable material and sufficiently thin to readily conform to the shape of the surfaces between which they are clamped are placed over the insulated arms or shanks.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a view, partially in elevation and partially in section, of a brush holder that is insulated in accordance with my invention and Fig. 2 is a cross section, on the line II—II, of the supporting means shown in Fig. 1.

Referring to the drawings, the brush holder illustrated therein comprises a carbon-holding box and spring support 1, which is arranged to receive one or more carbon brushes 2, and a plurality of cylindrical supporting arms or shanks 4 and 5, which, in combination with a clamp 7 and a bolt 8, serve to fasten the brush holder, as a whole, to a ledge 6 with which the frame of the machine is provided, as is usual in railway vehicle motors. The clamp 7 comprises a pair of complementary blocks which are provided with parallel, semi-cylindrical grooves to receive the shanks 4 and 5 and are fastened together and to the ledge 6 by the bolt 8 which passes through a hole near the center of the blocks and is screwed into the ledge. By loosening the bolt 8, the brush holder may be adjusted in a plane parallel to the center lines of the arms or shanks 4 and 5, and in order to prevent the grounding of the brush holder through the motor frame, the shanks are covered with a wrapping 10 of insulating material, such as mica. The wrapping 10 is protected from abrasion and from deterioration by contact with the air by caps 11 of suitable material, such as brass. The caps 11 are preferably made sufficiently thin to readily yield, when compressed, and are fitted closely over the insulating tubes in order that the shanks may be securely held against accidental longitudinal movement. Collars 12 of hard insulating material, such as porcelain, may be fitted over the shanks in order to limit the distance which they may project into the clamp 7.

It will be observed that, while the supporting shanks are cylindrical and while a longitudinal adjustment of the brush holder relative to its support is permitted, an undesirable rotary movement of the holder is prevented by the use of two shanks. Ade-

quate insulation of these parts may, therefore, be readily and effectively provided without introducing any of the disadvantages incident to the use of a brush holder
5 having a single square or cylindrical shank.

A brush holder pressure mechanism 13 comprises a shaft 14 which is attached to the frame 1, a sleeve 15, that is rotatably mounted thereon and is provided with a ratchet
10 wheel 16, and a brush-engaging finger 17 which is rotatably mounted on the sleeve 15 and is provided with a pawl 18 to engage the ratchet wheel 16. A spiral spring 19 is coiled about the sleeve 15, its inner extremity engaging a longitudinal groove 20 in the sleeve 15 and its outer extremity 21 being held stationary by engagement with the hooked projection 22 on the frame 1. A
15 guide web 23, which may be an integral part of the frame, extends from the projection 22 and so engages the outer turn of the spring 19 that all of its turns are held substantially in concentric relation to each other and to the sleeve 15. The finger 17 is provided
20 with a flexible member 24 having an end piece 25 which is held against the outer end of the brush by the pressure of the spring 19, the degree of pressure being adjusted by means of the pawl 18 and the ratchet 16.
25 The engaging surface of the ledge 6 may be covered with a layer of Babbitt metal or other similar material so that the lower clamping plate may more readily seat itself when pressure is applied by means of the
30 bolt 8.

Although I have shown insulating and supporting means constructed in accordance with my invention as applied only in connection with brush holders which are adapted for use with railway vehicle motors, such
40 means may, of course, be applied to any other type of brush holder which is similarly supported, and I desire that variations which do not depart from the spirit of my invention shall be included within its scope.
45

I claim as my invention:

1. In a brush holder, the combination with a pair of parallel and cylindrical supporting arms or projections, insulating tubes sever-

ally closed at one end and fitted over said 50 projections, and insulating stops or collars encircling the tubes near their open ends, of thin metal caps fitted over the tubes and abutting against the stops or collars.

2. In a brush holder the combination with 55 a pair of parallel and cylindrical supporting arms or projections, and insulating tubes severally closed at one end and fitted over said projections, of thin metal caps fitted over the insulating tubes to protect and seal 60 the insulation.

3. In a brush holder for dynamo-electric machines, the combination with a plurality of supporting arms and insulating sleeves therefor severally closed at one end, of seal- 65 ing and protecting caps or sheaths for the insulating sleeves, and means for rigidly mounting the brush holder.

4. In a brush holder for dynamo-electric machines, the combination with supporting 70 arms or projections of conducting material, insulating tubes severally closed at one end and fitted onto the projections, of a thin metal cap fitted closely over each insulating tube, and a two-part clamp or cleat for se- 75 curing the brush holder to a rigid body.

5. In a brush holder for dynamo-electric machines, the combination with a plurality of supporting arms and insulating sleeves therefor severally closed at one end, of seal- 80 ing and protecting caps or sheaths for the insulating sleeves.

6. In electric apparatus, the combination with a supporting arm of conducting material, an insulating tube closed at one end 85 and fitted over said arm, of a metal cap or sheath fitted over the insulating tube, and a clamp engaging the outside of the cap for securing the arm to a rigid body, said cap or sheath being sufficiently thin to conform 90 to the surfaces which engage it.

In testimony whereof, I have hereunto subscribed my name this 28th day of December, 1905.

JOHN E. WEBSTER.

Witnesses:

M. MACLAREN,
BIRNEY HINES.