

H. A. BALCOME.
BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.
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972,799.

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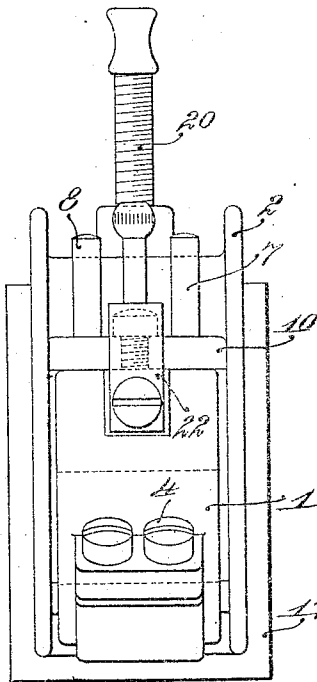


Fig. 1

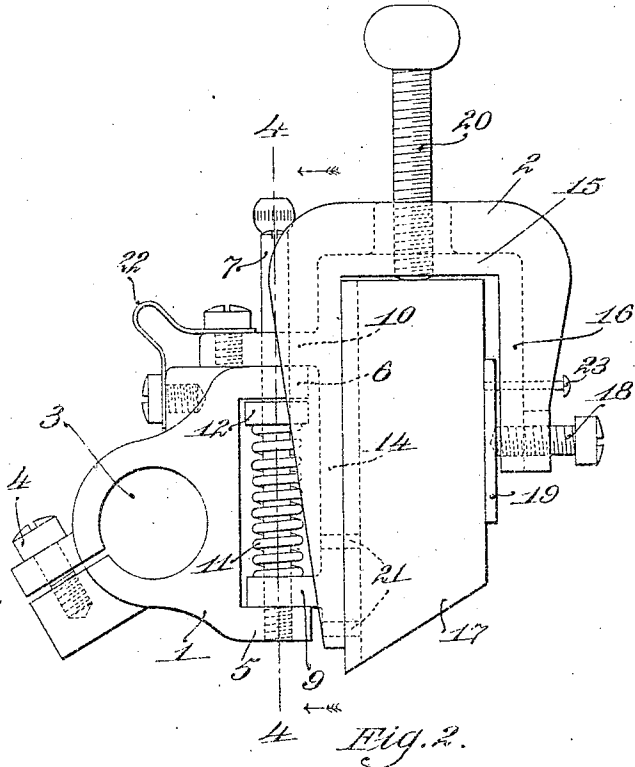


Fig. 2.

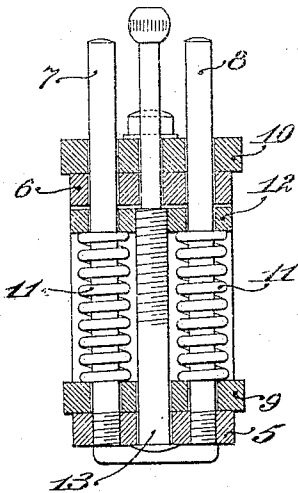


Fig. 4.

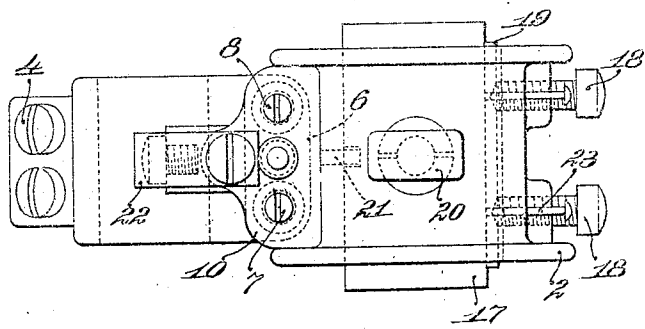


Fig. 3.

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UNITED STATES PATENT OFFICE.

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BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HERBERT A. BALCOME, a citizen of the United States, residing at Jamaica Plain, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Brush-Holders for Dynamo-Electric Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to brush holders for dynamo electric machines.

One of the objects of my invention is to provide a brush holder and more particularly a brush holder adapted to hold a carbon brush of such construction that a number of holders can be arranged longitudinally of the commutator with the edges of the brushes in contact or in close proximity with each other. Other objects of my invention are to provide a brush holder adapted to hold brushes of different widths and thicknesses, to provide a brush holder of such construction that a number of brush holders can be arranged about the commutator of a multi-polar machine without interfering with each other, and in general to provide a brush holder of improved, simplified and compact construction.

My invention consists in certain constructions and arrangements of parts hereinafter described and claimed, the advantages of which will be obvious from the following description.

A brush holder embodying my invention in its preferred form is illustrated in the accompanying drawings, but it is to be understood that except as defined in the claims my invention is not limited to the specific construction shown but may be otherwise embodied without departing from the spirit thereof.

Referring to the drawings, Figure 1 is a rear view of a brush holder embodying the several features of my invention, Fig. 2 is a view in side elevation thereof, Fig. 3 is a plan view, and Fig. 4 is a sectional view on the line 4-4 of Fig. 2.

The brush holder illustrated consists of a stationary member 1 and a movable member 2. The stationary member 1 is provided with an aperture or perforation 3 to receive the supporting stud of the dynamo or motor

and is clamped to the stud by means of the clamping screw 4. Projecting from the member 1 are two lugs 5 and 6 in which are supported two parallel guide-rods 7 and 8 which pass through the lug 6 and screw into the lug 5. The movable member 2 is provided with lugs 9 and 10 and the guide-rods 7 and 8 pass through perforations in these lugs, the construction being such that the movable member 2 is slidingly supported upon the guide-rods. The lug 10 of the movable member 2 extends over the lug 6 and the lug 9 extends between the lugs 5 and 6, so that the movement of the movable member in one direction is limited by the contact of either or both of the lugs 9 and 10 with the lugs 5 and 6. The movable member is pressed toward the commutator by means of coiled springs 11 surrounding the guide-rods 7 and 8 and bearing against the lug 9 of the movable member. As a means for adjusting the tension of the springs 11 a follower 12 is provided through which the rods 7 and 8 pass and which rests upon the springs below the lug 6 of the stationary member. The follower has a screw-threaded engagement with a screw-threaded rod 13 journaled in the lugs 5 and 6 of the stationary member and passing loosely through the perforations in the lugs 9 and 10 of the movable member. The upper end of the rod 13 is provided with a knob by means of which the shaft can be rotated and the follower 12 actuated to compress the springs 11.

The movable member 2, as viewed in Fig. 2, comprises a vertical portion 14, a portion 15 extending horizontally therefrom, and a portion 16 extending vertically downward from the portion 15, these portions forming a socket to receive the brush 17, the sides of which socket are open so that the socket can receive a brush of greater width than the width of the stationary or movable member. The side of the socket formed by the portion 14 is provided with a smooth flat face against which the brush is frictionally clamped by clamping screws 18 which have a screw-threaded engagement with the portion 16 of the movable member and bear against a clamping plate or shoe 19 interposed between the ends of the screws and the brush.

The brush 17 is preferably a carbon block and the clamping plate or shoe 19 serves to

protect the comparatively soft carbon from contact with the ends of the clamping screws. The brush 17 can be clamped in the socket in the movable member 2 by means of the clamping screws 18 so as to project any desired distance beyond the portion 14 of the movable member. As a convenient means for determining the position of the brush and for adjusting the brush to cause it to project a greater distance a feed screw 20 is arranged to bear against the end of the brush. This feed screw has a screw-threaded engagement in a slotted boss formed on the portion 15 of the movable member and is provided at its upper end with a knob by means of which it can be actuated. The clamping plate or shoe 19 engages the brush 17 frictionally and if desired the brush can be adjusted by means of the feed screw without loosening the clamping screws 18. To prevent the clamping plate or shoe 19 from dropping out of the holder when the screws 18 are loosened, it is supported by means of headed pins 23 secured to the plate or shoe and passing through perforations in the portion 16.

As a means for guiding the brush during its adjustment and also for insuring the correct position of the brush when inserted in the socket, guiding pins 21 are provided which project into the socket from the portion 14 of the movable member and engage a groove cut in the brush. The brush is firmly clamped against the flat surface of the portion 14 which may extend nearly to the end of the brush and thus an excellent electrical connection is established between the brush and its holder. In order to convey the current from the stationary member 1 to the movable member 2 of the holder, a flexible conductor 22 is provided which, as shown, consists of one or more thin strips of copper secured at one end to a lug on the stationary member 1 and at the other end to the lug 10 of the movable member 2.

In the brush holder above described, it will be seen that a brush of greater width than the stationary or movable member of the brush holder can be secured to said member and that therefore a number of brush holders can be mounted upon the same stud, the brushes being arranged longitudinally of the commutator with their edges in contact or in close proximity to each other. It will also be seen that brushes of different widths and of different thicknesses can be readily clamped to the movable member of the holder that the ordinary commercial carbon brush of substantially uniform thickness can be used, and that no preparation of the brushes, such as boring them to receive screws or otherwise fitting them to the holder, is necessary, except the cutting of the groove which receives the guiding pins 21. It will also be seen that the brush moves in

a straight line toward and from the commutator and is located close to the stud which supports the holder, so that the holders can be arranged in close proximity to each other circumferentially around the commutator of a multi-polar machine.

Having thus indicated the nature and scope of my invention and having described the preferred embodiment thereof, I claim as new and desire to secure by Letters Patent of the United States.

1. A brush holder, having, in combination, a stationary member, a movable member mounted to slide thereon provided with an open-sided socket to receive a brush of greater width than the said stationary or movable member, means for frictionally clamping the brush in the socket and a feed screw bearing against the end of the brush, substantially as described.

2. A brush holder, having, in combination, a stationary member, a movable member mounted to slide thereon provided with a socket to receive the brush, means for clamping the brush in the socket, a feed screw bearing against the end of the brush, and means for guiding the brush, substantially as described.

3. A brush holder, having, in combination, a stationary member, a movable member, means for clamping a brush thereto, guide-rods secured to the stationary member, lugs on the movable member provided with perforations to receive the guide-rods, a screw-threaded rod mounted in the stationary member, a follower having a screw-threaded engagement therewith, and springs surrounding the guide-rods and interposed between the follower and one of the lugs on the movable member, substantially as described.

4. A brush holder, having, in combination, a stationary member, a movable member, means for clamping a brush thereto, means independent of the brush for supporting and guiding the movable member on the stationary member including guide rods secured to the stationary member, and lugs on the movable member provided with perforations to receive the guide rods, substantially as described.

5. A brush holder, having, in combination, a stationary member, a movable member, means for clamping a brush to the movable member, means independent of the brush for supporting and guiding the movable member on the stationary member including guide rods secured to the stationary member, lugs on the movable member provided with perforations to receive the guide rods, springs acting upon the movable member, and means for adjusting the tension of the springs, substantially as described.

6. A brush holder, having, in combination, a stationary member, a movable mem-

ber provided with an open-sided socket to receive a brush of greater width than the stationary or movable member, means for frictionally clamping the brush in the socket, and cooperating guide rods and perforated lugs on the stationary and movable members, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses.

HERBERT A. BALCOME.

Witnesses:

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ALFRED H. HILDRETH.