

No. 851,793.

PATENTED APR. 30, 1907.

R. E. BARKER.
BRUSH HOLDER.

APPLICATION FILED NOV. 13, 1903.

Fig. 1.

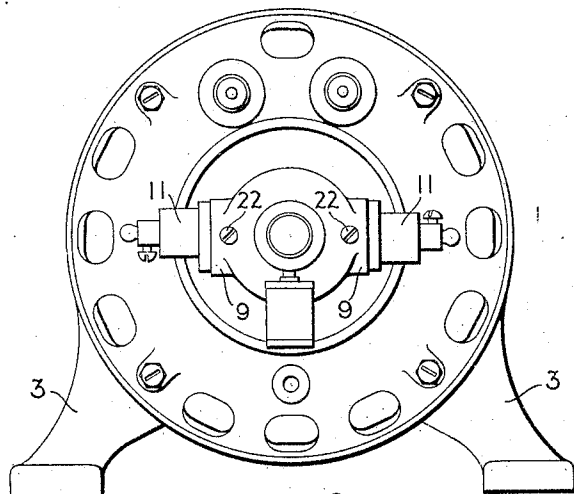


Fig. 2.

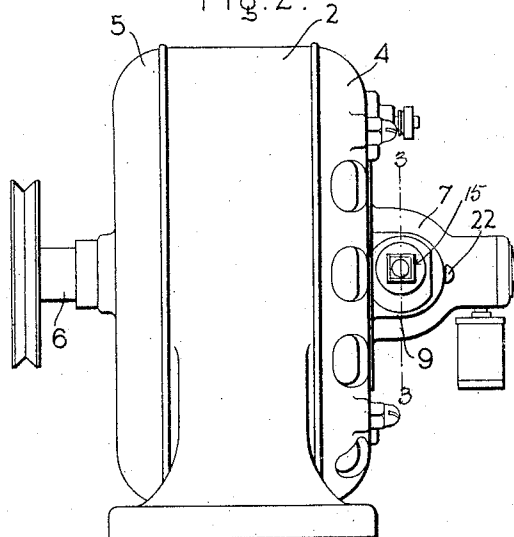
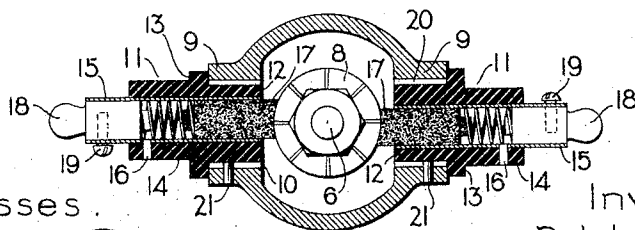


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

RALPH E. BARKER, OF LYNN, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BRUSH-HOLDER.

No. 851,793.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed November 13, 1903. Serial No. 180,986.

To all whom it may concern:

Be it known that I, RALPH E. BARKER, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Brush-Holders, of which the following is a specification.

In ordinary commutating dynamo-electric machines it is frequently desirable to vary the lead of the current-collecting brushes. For instance, when the direction of rotation of the machine is reversed it is desirable to reverse the lead.

My present invention has for its object the provision of an improved form of brush-supporting means so constructed that the lead of the brushes may be readily varied.

My invention consists in certain features of construction and arrangement which will be fully pointed out in the claims annexed to and forming a part of this specification.

For a better understanding of my invention reference may be had to the accompanying drawings in which I have illustrated one embodiment of my invention.

Of the drawings, Figure 1 is an end elevation and Fig. 2 is a side elevation of a dynamo-electric machine; Fig. 3 is a sectional elevation on the line 3 3 of Fig. 2.

In the drawings, 1 represents a dynamo-electric machine provided with a field ring 2 from which integral supporting feet 3 project. Members 4 and 5 are secured at opposite ends of the ring 2. The members 4 and 5 are provided with bearings in which the armature-shaft 6 is journaled.

The member 4 is formed with a bell-shaped portion 7, which incloses the commutator 8. Bosses 9 having openings or sockets 10 formed in them project from opposite sides of the bell-shaped portion 7. These openings or sockets, which may be cylindrical, are in line with one another and extend perpendicularly to the shaft 6.

A brush-holder 11 is placed in each socket 10. The brush-holders are in the form of bushings which are preferably formed of some insulating material such as hard rubber or the like. The bushings are formed each with a portion 12 which fits one of the openings 10, and with a flange portion 13, which abuts against the outer ends of the bosses 9. In the construction shown in the drawings, the bushings are formed with outer portions

14 which are smaller in diameter than the portions 12 and are placed eccentrically with respect to them.

A metallic box or tube member 15, which is shown as having a bore of rectangular cross section, is placed in an opening formed for the purpose in each bushing. These boxes are eccentrically located with respect to the portions 12 of the brush-holder but may be concentrically placed with respect to the portions 14. The boxes are secured in place in the bushings in any suitable manner, as by means of pins 16. Suitable brushes 17, which may be formed of carbon, are placed in the boxes. The inner ends of these brushes bear against the commutator when the bushings are in position. Plugs 18, which may be formed of suitable insulating material, such as wood, are secured in place in the outer ends of the boxes. Suitable springs are located in the boxes between the inner ends of the plugs 18 and the outer ends of the bushings 17. These springs hold the brushes against the commutator with the proper amount of pressure. Each box 15 carries a clamping screw 19 by which a current-carrying conductor or lead may be secured to the box.

When the bushings which form the brush-holders are assembled on the bosses 9, they are arranged so that the brush at the left, for instance, in Fig. 3 is near the upper side of the boss 9, and the brush which is to the right in Fig. 3 is near the lower side of the boss 9. When it is desired to reverse the direction of rotation of the armature, the bushings will be shifted so that the brush at the left of Fig. 3 will be nearer the lower part of the boss 9, while the brush on the right of Fig. 3 will be nearer the upper part of the boss 9. By properly proportioning the parts the change in position of each brush with respect to the commutator, which will be double the eccentricity of the brush with respect to the portion 12 of the holder, will be sufficient for the proper operation of the machine in the reverse direction of rotation.

As shown in Fig. 3, diametrically opposed key-ways 20 may be formed in each holder. Suitable pins or keys 21 carried by the bosses 9 co-operate with the key-ways 20 to properly position the holders in the bosses. In order to obtain the proper change in position of each brush when it is desired to reverse the

direction of rotation of the motor, it is only necessary to remove each holder, give it a half turn about its own axis and reinsert it in the socket from which it was removed.

5 Suitable set-screws 22 are employed to lock the holders in place.

10 Instead of reversing each holder in its boss, it may be preferable to simply interchange the holders with respect to the bosses without rotating the holders about their axes. This has the effect of reversing the connections of the motor and at the same time producing the necessary change in position of the brushes without disconnecting the leads from
15 the brushes.

While my invention is generally applicable to commutating machines, it is particularly intended for use in connection with small motors which are ordinarily or at least
20 frequently controlled by operators possessing but little skill. My invention provides a means by which the connections to the motor and the position of the brushes may be altered by such process with comparative ease and safety.

What I claim as new and desire to secure by Letters Patent of the United States, is,

1. In combination with a dynamo-electric machine provided with a commutator, a casing or supporting member provided with two
30 sockets, bushings removably secured in said

sockets, and brushes eccentrically mounted in said bushings.

2. In a dynamo electric machine, a commutator, a cooperating brush, a holder for
35 the brush, a support for the holder, and means for interchangeably securing the brush-holder rigidly to the support in either of two operative positions, to give a brush
40 lead in one direction or the other.

3. In combination, a brush-holder and a support therefor formed with a socket into which the brush-holder may be inserted in different positions, and a brush located eccentrically in said holder whereby by vary-
45 ing the position of the brush-holder in said socket the lead given to the brush can be varied or reversed.

4. In a dynamo-electric machine, a support provided with a socket, a brush, and
50 means for securing said brush in different portions of said socket.

5. In a dynamo-electric machine, a support provided with a socket, a brush and holder therefor, and means for securing said
55 holder in said support in different positions.

In witness whereof, I have hereunto set my hand this tenth day of November, 1903.

RALPH E. BARKER.

Witnesses:

DUGALD McK. McKILLOP,
JOHN A. McMANUS.