

J. BERG.
BRUSH MOUNT FOR ELECTRIC MOTORS.
APPLICATION FILED JAN. 27, 1917.

1,265,873.

Patented May 14, 1918.

Fig. 1.

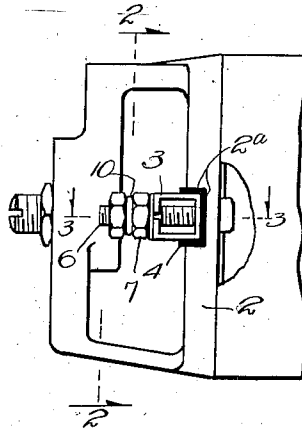


Fig. 2.

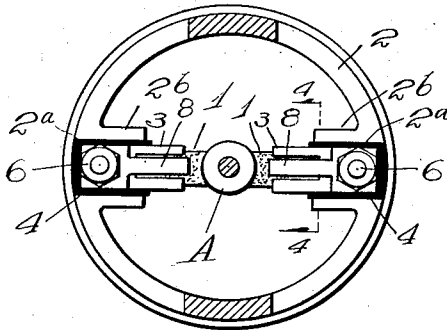


Fig. 3.

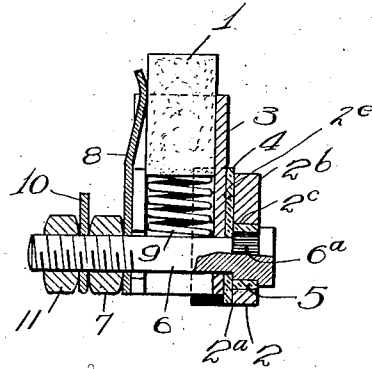
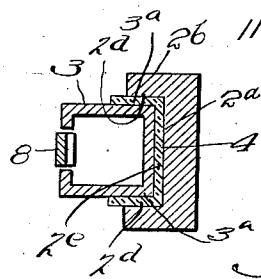


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BRUSH-MOUNT FOR ELECTRIC MOTORS.

1,265,873.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH BERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Brush-Mounts for Electric Motors, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide means for mounting the brushes of a small electric motor, or generator, which shall insure rapidity and correctness in assembling, dispensing with the necessity for initial or subsequent adjustment and which shall at the same time be economical in manufacture. The invention consists in the features and elements of construction and their combination described and shown in the drawings as indicated by the claims.

In the drawings:—

Figure 1 is a side elevation of a portion of a motor equipped with brush mounting devices embodying this invention.

Fig. 2 is a section taken as indicated at line 2—2 on Fig. 1.

Fig. 3 is a detail section on a larger scale taken as indicated at line 3—3 on Fig. 1.

Fig. 4 is a detail section taken as indicated at line 4—4 on Fig. 2,—but with the brush removed.

As shown in the drawings, the brushes, 1—1, disposed at opposite sides of the commutator, A, are yieldingly supported on the frame, 2, by means of the construction embodying this invention. The frame, 2, is formed with diametrically disposed slots, or grooves, 2^a, in which the brush holders, 3, are fitted with insulating material, 4, interposed as clearly shown in Fig. 4. The brush holders, 3, as illustrated, are of rectangular cross-section, and the grooves, 2^a, are also of this form so as to fit them snugly affording the surface, 2^c, at the bottom of the groove, and the surfaces, 2^d, 2^d, transverse to 2^c, and adjacent to the lateral surfaces, 3^a, of the holder, for lodgment and positioning of the holder, but, obviously, the brush holders might be of cylindrical form or any other suitable shape, in which case the shape of the grooves, 2^a, would be suitably altered to fit them.

The annular frame, 2, is preferably formed with inwardly projecting lugs, 2^b, in which the grooves, 2^a, are continued toward the

axis of the motor, so that said grooves may have sufficient length for retaining the brush holders in correct alinement. From the bottom of each groove, 2^a, an aperture, 2^e, leads through the frame, 2, and is fitted with an insulating bushing, 5, into which a bolt, 6, is driven tight. Preferably the bolt, 6, is formed with a step or shoulder at 6^a, just under its head, and the circumference of this head is knurled or serrated so as to interlock with the inner surface of the bushing, 5, when driven thereinto, and thus secure the bolt against rotation in the bushing and in the frame, 2, so as to facilitate the placing of the nut, 7, upon said bolt. This nut, 7, besides serving to retain the brush holder, 3, in the groove, 2^a, also holds in position a spring tongue, 8, whose free and yielding end-portion lies in contact with the brush, 1, in the holder, 3. It will be understood that, if it be preferred to make the holder, 3, of non-conducting material, the spring member, 8, will serve as an electric connection between the bolt, 6, and the brush, 1; and that, if the brush holder, 3, is metallic and thus adapted to carry the current, the pressure of the spring, 8, will insure adequate contact between the brush, 1, and said holder, 3.

Within the holder, 3, is pocketed a coil spring, 9, reacting between the bolt, 6, and the outer end of the brush, 1, and pressing the latter against the commutator, A, in the usual manner. This spring causes the brush to be more and more protruded from the holder, 3, as its end, in contact with the commutator, wears down.

The bolt, 6, is of sufficient length to project through the holder, 3, and the securing nut, 7, and to serve as a binding post for attaching the conductor, 10, which will be clamped between the securing nut, 7, and a binding nut, 11, as shown in Fig. 3. Thus the bolt, 6, is made to serve three purposes; viz., that of securing the brush holder, 3, in position, acting as a binding post for the conductor, 10, and electrically connecting the conductor, 10, with the brush, 1, without such extra wiring between these parts as is required in many other constructions. It will be evident that when the frame, 2, is accurately machined, the brushes, 1, are bound to be assembled in correct relation to the commutator, A, because the brush holders, 3, can only be assembled in the grooves, 2^a, in

correct alinement. Furthermore, such assembling can be very easily and quickly accomplished without any special skill and, upon dropping the springs, 9, into their respective holders and inserting the brushes, 1, therein, the brushes may be momentarily held apart with the finger while the motor shaft with its commutator, A, is positioned between them, completing the assembly of this part of the motor.

I claim:

1. The combination of a frame and a hollow brush holder thereon, the frame having a seat for the holder comprising a surface upon which the latter is lodged and a surface transverse thereto, adjacent to the lateral surface of the holder, together with a securing bolt passing through the seat and the holder, transversely of the lodgment surface, the said transverse surface engaging the holder to prevent pivotal movement upon said bolt, and a brush in said holder.

2. The combination of a frame member having a channel, a socket member lodged therein, a brush slidably carried in such socket, and a bolt passing through the frame and socket transversely of the bottom of the channel for holding the socket therein.

3. The combination of a frame member having a channel, a socket member lodged therein, a brush slidably carried in such socket, and a bolt passing through the frame and socket transversely of the bottom of the channel for holding the socket therein, means insulating the bolt and the socket from the frame, means for attaching a conductor to the bolt, and a spring contact member secured by said bolt with a yielding portion in contact with the brush in the socket.

4. The combination of a frame member having a channel, a socket member lodged therein, a brush slidably carried in such socket, a bolt passing through the frame and socket transversely of the bottom of the channel for holding the socket in place, means insulating the bolt and the socket from the frame, means for attaching a conductor to the bolt, said socket having an

opening at one side and a spring contact member secured by said bolt with a yielding portion projecting through said opening in contact with the brush in the socket.

5. The combination of a frame and a tubular brush holder thereon, the frame having a seat engaging the holder at one side and formed with a surface transverse to such engaging side, positioned adjacent another side of the tubular holder, together with a securing bolt passing through the tube and into the first-mentioned seat, the said transverse surface thus acting to prevent pivotal movement of the tube upon said bolt.

6. The combination of a frame member and a tubular brush holder of non-circular cross-section secured thereto, said holder having a slit at one side, a yielding contact member adapted to engage the brush in the holder through such slit and a single securing bolt in the frame passing through both the tubular holder and the yielding contact member for retaining said part on the frame.

7. The combination of a frame member and a tubular brush holder of non-circular cross-section secured thereto, said holder having a slit at one side, a yielding contact member adapted to engage the brush in the holder through such slit and a single securing bolt in the frame passing through both the tubular holder and the yielding contact member for retaining said part on the frame, said bolt being fitted with two nuts, one of which is adapted to clamp the brush holder and contact member to the frame, the other nut serving to secure a conductor wire to the bolt.

8. The combination of a frame, a tubular brush holder thereon, a bolt passing transversely through said tubular holder for securing it to the frame, a brush slidably carried in the holder, and a spring pocketed therein, so as to react between said brush and the said securing bolt.

In testimony whereof, I have hereunto set my hand at Chicago, this 18 day of January, 1917.

JOSEPH BERG.