R. E. NOBLE & L. E. MITCHELL.

BRUSH HOLDER.

APPLICATION FILED JULY 11, 1910.

990,492. Patented Apr. 25, 1911.

Fig. 1

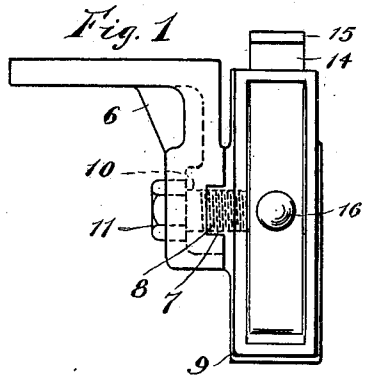


Fig. 2

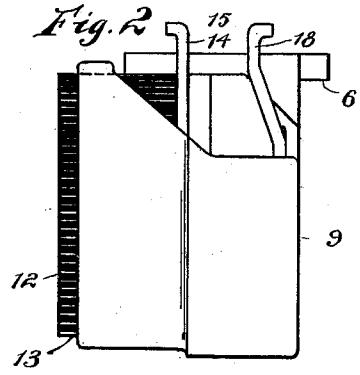


Fig. 3

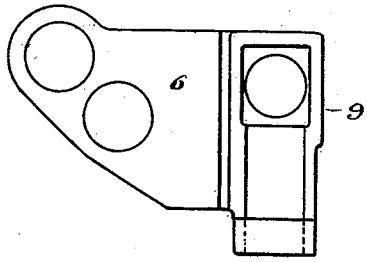


Fig. 4.

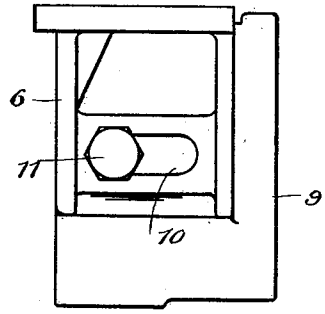
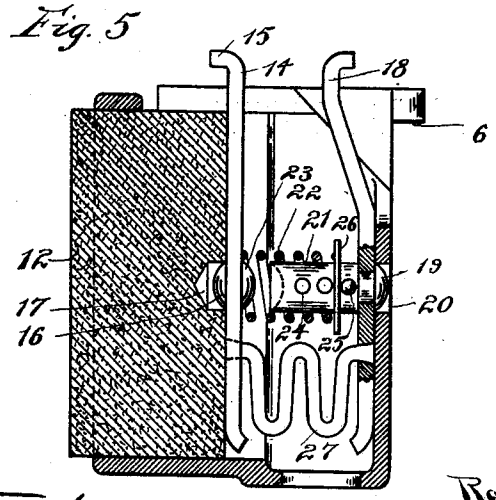


Fig. 5



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UNITED STATES PATENT OFFICE.

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BRUSH-HOLDER.

990,492. Specification of Letters Patent. Patented Apr. 25, 1911.

Application filed July 11, 1910. Serial No. 571,263.

To all whom it may concern:

Be it known that we, RALPH E. NOBLE and LOUIS E. MITCHELL, citizens of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brush-Holders, of which the following is a specification.

This invention relates to brush holders for dynamos, motors, or other similar electric machines where the current is transmitted from a stationary to a movable part; and its objects are to simplify the construction of such holders, to provide means whereby the brushes may be readily adjusted, to provide means whereby the brush and spring or follower which urges the same against the movable part may be readily removed and replaced, and such other advantages as will appear from the following description.

We have illustrated our invention in the accompanying drawings, in which—

Figure 1 is a front view of the holder with the brush removed; Fig. 2 is a side view of the same, showing the brush in position; Fig. 3 is a plan view of the bracket and casing; Fig. 4 is a side view showing the opposite side from Fig. 2, but with the brush removed; and Fig. 5 is an enlarged sectional view of the holder with the brush in position.

As illustrated in these drawings, 6 indicates an arm or bracket which is adapted to be secured to any convenient portion of the frame of the motor or dynamo, this bracket being provided with a groove 7 which is adapted to receive the tongue 8 on the side of the adjustable brush-supporting casing 9. The bracket 6 is also provided with a slotted hole 10 through which a set-screw or bolt 11 is passed, the end of the bolt engaging with the casing 9 and thereby providing an adjustable connection between the bracket and the casing.

The brush proper 12 fits freely within the casing 9 and is adapted to extend out through the opening 13 in one side of the casing. The brush 12, which is preferably formed of carbon or other suitable material, is pressed outwardly by means of the adjustable pressure device, which is most clearly shown in Fig. 5. This device comprises a strip 14 of about the same width as the brush and extending along the back thereof and preferably up and out through an opening in the top of the casing 9, where it is bent as indicated at 15 so that it may be readily grasped by the fingers. This strip is provided, at about the center thereof, with a forward projection 16, which may be formed integrally therewith or may be in the form of a rivet head, which projection engages with a recess 17 in the back of the brush 12. A second similarly formed strip 18 engages with the inner face of the back wall of the casing 9, this strip having a projection 19 which is adapted to engage with an opening 20 in the wall. One of these strips, preferably the rear one, is provided with a stem or pin 21 which is adapted to engage with the spring 22, which spring tends to hold the strips 14 and 18 normally apart. The forward end of the spring 22 engages with a lug or projection 23 on the strip 14, the end of the stem or support 21 being preferably hollowed out so that the projection 23 may enter the same when the strips are pressed together. In order to adjust the tension on the spring 22, the stem or support 21 is provided with a plurality of holes 24 through which a pin 25 is passed to receive the pressure of the spring, a washer 26 being preferably inserted between the pin and the spring. The lower ends of the strips 14 and 18 are connected by means of a flexible conductor 27 which is adapted to carry the main portion of the current, in order to protect the spring 22 from injury thereby.

In operation, the current passes, for instance, from the movable member, such as the commutator, to the brush 12, and then through the strip 14, conductor 27, strip 18 and rear wall of the casing to the body of the casing, a portion of the current at the same time passing directly from the brush to the casing. From the casing, the current passes through the bracket 6 to any suitable lead which may be attached or secured thereto. When it is desired to adjust the brushes, the casing may be moved along the slot 7 and then held in adjusted position by means of the screw 11, or the spring 22 may be adjusted by placing the pin 25 in one or the other of the holes 24 provided for it. When it is desired to remove the brush, as for renewal, all that is necessary is to grasp the upper ends of the strips 14 and 18 and pinch them together, thereby bringing the lugs or projections 16 and 19 out of engagement

with the holes or recesses provided therefor, when the strips and connected parts may be readily slipped up out of the opening in the top of the casing. The brush 12 is then free to be pressed back into the casing and up out of the same opening. A new brush is inserted by substantially reversing this operation, it being noted that the lower ends of the strips 14 and 18 are preferably curved inwardly to assist in slipping them into their normal position.

Having thus described our invention, which may be varied without departing from the spirit thereof, what we claim and desire to secure by Letters Patent is:

1. In a brush holder, the combination of a bracket, a casing adjustably secured to said bracket, a brush slidably mounted in said casing and projecting from one side thereof, a strip adapted to press against said brush, a second strip oppositely disposed with respect to said first-named strip and pressing against the casing, and a spring tending to press said strips apart.

2. In a brush holder, the combination of a casing for receiving the brush, said casing being open at one side to allow the brush to project therethrough, a pair of substantially parallel strips or bars in said casing, a stud on one of said bars, said stud being provided with a plurality of holes longitudinally thereof, a pin adapted to engage with said holes, and a spring between said pin and the opposite bar, tending to hold said bars normally apart, one of said bars being adapted to rest against the casing and the other against the brush, whereby pressure may be exerted on the brush.

3. In a brush holder, the combination of a box or casing for receiving the brush, said casing being open at one side to allow the brush to project therethrough, a pair of strips or bars in said casing, means tending to hold said bars normally apart to press the brush outwardly, and a flexible conductor between said bars.

4. In a device of the character set forth, the combination of a box or casing having an opening through the side thereof, a brush slidably mounted in said casing, a bar engaging with said brush, said bar being provided with a lug or projection engaging with a recess in said brush, a second bar having a lug engaging with a recess in said casing, and an adjustable spring between said bars.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."