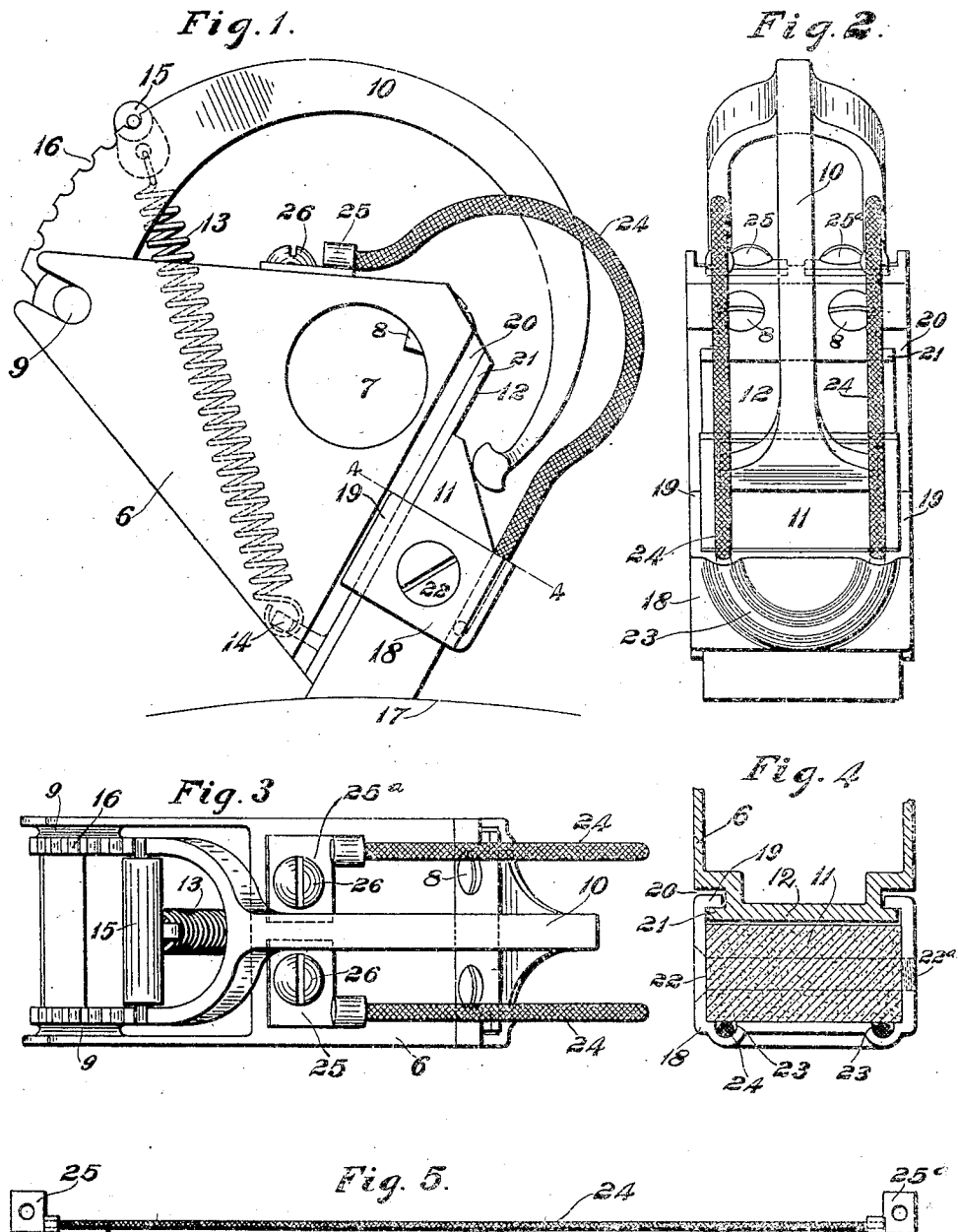


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BRUSH HOLDER.
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Witnesses

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ANTHONY L. McHUGH, OF NORWOOD, OHIO, ASSIGNOR TO THE BULLOCK ELECTRIC MANUFACTURING COMPANY, A CORPORATION OF OHIO.

BRUSH-HOLDER.

932,309.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ANTHONY L. McHUGH, a citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Brush-Holders, of which the following is a full, clear, and exact specification.

My present invention relates to brushes and brush-holders for dynamo-electric machines.

In connection with the use of brushes and brush-holders such as are illustrated and described in Patent No. 634,804 granted to Cooper, *et al.*, October 10, 1899; some difficulty has been experienced due to an irregular wearing away of the brushes and a tendency for the brushes to twist around on the bearing surface or contact plate of the holder as the brush is fed toward the commutator surface.

The main object of my invention is therefore to eliminate the evil effects due to the difficulties stated above and to produce an efficient and practical brush and holder.

A further object is to provide a simple and inexpensive means for attaching a flexible conductor or pig-tail to a carbon brush in order to overcome some of the difficulties which have been experienced heretofore.

In one of its aspects the invention consists of a brush-holder body having a brush slidably mounted thereon, and held in place by means of a clamp embracing the brush and fastened thereto and having its projecting ends engaging guide grooves formed in said brush holder body.

In another of its aspects the invention comprises a carbon brush having a flexible conductor or pig-tail fastened thereto in contact with the brush at a portion of the flexible conductor intermediate its ends.

The invention further comprises specific combinations of elements which will be hereinafter described and more particularly pointed out in the appended claims.

In the accompanying drawings, which illustrate the preferred embodiment of my invention, Figure 1 is a side elevation of my improved holder with the brush in position; Fig. 2 is a front elevation of same; Fig. 3 is a plan view of same; Fig. 4 is a section through the brush and holder on line 4-4 of Fig. 1; and Fig. 5 is a view of the form

of flexible conductor or pig-tail I prefer to use.

Referring now to the drawings, the brush-holder body is illustrated at 6. This holder is preferably a box-shaped casting and is provided with the opening 7, through which passes the stud upon which the holder is mounted. The set screws 8 are employed for fastening the holder in position after it has been adjusted on said stud. Pivoted at 9 on the holder-body is the pressure-finger 10, the outer end of which bears against the upper surface of the carbon brush 11, which is slidably mounted in said holder and engages the bearing surface or contact plate 12 of said holder-body. The pressure finger is held in contact with the brush by the spring 13, the lower end of which is fastened to the holder-body at 14, and the upper end of which is attached to the cross piece 15, the latter being adjustable in the notches 16 in order to adjust the pressure upon the finger 10 to obtain the pressure desired between the carbon brush 11 and commutator 17.

To prevent the brush from twisting about on the bearing surface 12, I provide a clamp which consists of the strip 18 of metal embracing three sides of the brush 11, and having its ends so shaped as to form overhanging flanges 19, which slide in the grooves 20 in the body 6 and co-act with the flanges 21, formed on two parallel edges of the surface 12. The strip 18 is fastened to brush 11 preferably by means of the bolt 22, which passes completely through the brush and is threaded into the opposite side of the strip 18 at 22. The strip 18 is also provided with the groove 23 which receives the flexible conductor or pig-tail 24 at a point intermediate the ends thereof, leaving said ends free to be fastened to the brush holder. A considerable portion of the flexible conductor is held in intimate contact with the brush, as indicated in Fig. 4; thus increasing the current carrying capacity of the contact and the pig-tail without necessitating a large number of soldered terminals and connections, only two terminals 25 and 25^a being employed in the form illustrated. These terminals 25 and 25^a are fastened to the holder-body at 26, (as shown in Figs. 2 and 3).

All modifications and changes which may

be made in the device herein illustrated and described and which do not involve a departure from the spirit of my invention, I aim to cover in the appended claims.

5. Having thus described my invention, what I claim as new and desire to secure by Letters Patent is—

1. In combination, a brush-holder body provided with guide grooves, a brush, and means for slidably mounting said brush on said holder-body, said means comprising a clamp embracing the brush and fastened thereto and having its projecting ends engaging said guide grooves.

2. In combination, a brush-holder body provided with guide grooves, a brush, and means for slidably mounting said brush on said holder-body, said means comprising a clamp consisting of a strip of metal embracing the brush and fastened thereto and having its projecting ends engaging said guide grooves, and a pressure finger carried by said holder-body and bearing against the upper surface of said brush.

3. A brush-holder body provided with a bearing surface on which a brush is adapted to slide and with flanges at the parallel edges of said surface, in combination with a brush engaging said surface and carrying clamping means which extends over the front face of the brush, said clamping means having overhanging flanges which co-act with the flanges on said holder-body to constrain said brush to move rectilinearly on said surface.

4. A brush-holder body provided with a bearing surface on which a brush is adapted to slide and with flanges at the parallel edges of said surface, in combination with a brush engaging said surface and carrying clamping means having overhanging flanges which co-act with the flanges on said holder-body to constrain said brush to move rectilinearly on said surface, an adjustable pressure finger carried by said holder body and bearing against the upper surface of said brush, and a flexible conductor held by said clamping means.

5. In combination, a brush-holder body provided with guide grooves, a brush, and means for slidably mounting said brush on said holder-body, said means comprising a clamp consisting of a strip of metal embracing the brush and fastened thereto and having its projecting ends engaging said guide grooves, and a flexible electrical conductor or pig-tail fastened to said brush by being clamped between said strip and the brush.

6. In combination, a brush-holder body provided with guide grooves, a brush, and means for slidably mounting said brush on said holder body, said means comprising a clamp consisting of a strip of metal embracing the brush and fastened thereto and having its projecting ends engaging said guide

grooves, a flexible electrical conductor or pig-tail fastened to said brush by having a part of said conductor intermediate its ends clamped between said strip and the brush, and means for fastening the free ends of said conductor to the holder-body.

7. A brush-holder body provided with a bearing surface on which a brush is adapted to slide and with flanges at the parallel edges of said surface, in combination with a brush engaging said surface, a clamp carried by said brush consisting of a strip embracing three sides of said brush and provided with over-hanging flanges engaging the flanges on said holder-body, and a bolt passing completely through said brush to fasten the strip to said brush.

8. In combination, a brush holder body provided with guide grooves, a brush, means for slidably mounting said brush upon said brush holder body, said means comprising a metal strip embracing said brush, and having its ends engaging said guide groove, a flexible conductor or pig-tail, and means including said metal strip for securing said conductor or pig-tail intermediate its ends to said brush.

9. In combination, a brush holder, a brush slidably mounted thereon, a flexible conductor or pig-tail removably secured to said brush holder at its ends and having a portion intermediate its ends fastened to said brush, the fastening means comprising a strip or plate which engages the conductor or pig-tail and clamps the same in contact with the brush.

10. As an article of manufacture, a carbon brush having a flexible conductor or pig-tail fastened thereto in contact with said brush at a portion of said conductor intermediate the ends thereof, the fastening means consisting of a strip of metal which receives the conductor and is secured to the brush.

11. As an article of manufacture, a carbon brush having a flexible conductor or pig-tail fastened thereto in contact with said brush at a portion of said conductor intermediate the ends thereof, the fastening means consisting of a strip of metal provided with a groove to receive said conductor and a bolt for attaching said strip to the brush.

12. As an article of manufacture, a carbon brush, and a metal guide, a bolt securing the latter to the brush, said guide embracing three sides of the brush and having portions projecting from said brush in parallel planes and having its extreme ends bent toward each other in a plane parallel to the fourth side of the brush at a predetermined distance therefrom.

13. As an article of manufacture, a carbon brush, a metal guide strip, a bolt securing the latter to the brush, said strip embracing three sides of the brush and having portions projecting from said brush in parallel planes

and having its extreme ends bent toward each other in a plane parallel to the fourth side of the brush at a predetermined distance therefrom, and a flexible conductor fastened to the brush through the agency of said strip and bolts.

14. In combination, a brush holder body, a carbon brush slidable thereon, a metal strip fastened to said brush and engaging guide

grooves in said brush holder body, and a 10 flexible conductor or pig-tail clamped between said brush and said metal strip.

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

ANTHONY L. McHUGH.

Witnesses:

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