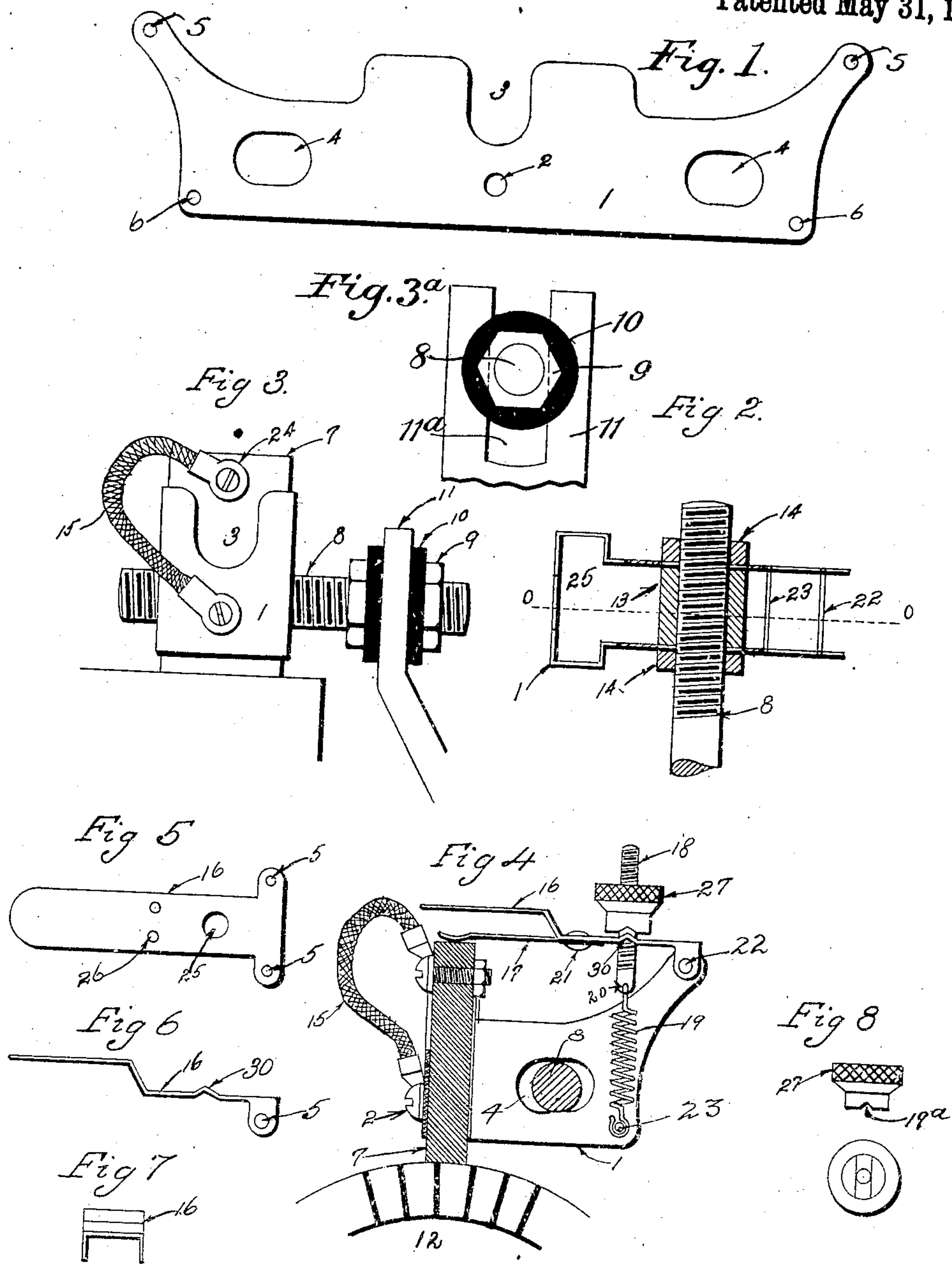


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BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.  
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960,095.

Patented May 31, 1910.



WITNESSES:  
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# UNITED STATES PATENT OFFICE.

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BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.

960,095.

Specification of Letters Patent.

Patented May 31, 1910.

Application filed February 23, 1909. Serial No. 479,661.

*To all whom it may concern:*

Be it known that I, CARL E. JOHNSON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles, State of California, have invented new and useful Improvements in Brush-Holders for Dynamo-Electric Machines, of which the following is a specification.

An object of the invention is to furnish a brush-holder which is simple in construction and highly efficient in operation, inexpensive to manufacture, and economical as to weight of metal used.

The invention relates to that style of brush-holder called the box type, in which the carbon brush or other material collecting current from the commutator or slip ring, moves freely in the holder itself, the holder being rigidly supported.

The inventor is well aware of the fact that there are many styles of brush-holders in use at the present time, of which the majority are expensive to manufacture.

An important object of this invention, is to furnish a brush-holder which will allow the pieces that have been heretofore expensive to manufacture to be made on the punch press or other forming machine at less cost. It can readily be seen to any one familiar with machine shop practice, that an article manufactured as hereinafter described, can be put on a dynamo electric machine at little cost and yet serve the same object equally as well as the majority of brush-holders now used and made by more expensive processes of manufacture.

In the annexed drawings forming a part of the specification, Figure 1 shows a suitable blank after stamping. Fig. 2 shows said blank as it appears in the completed device. Fig. 3 gives a front view of holder, showing a brush therein. Fig. 3<sup>a</sup> is a view looking at the right end of Fig. 3, but showing the supporting means only. Fig. 4 shows a cross section of holder taken on the plane of line 0, in Fig. 2. Fig. 5 shows a view of pressure lever 16, after being stamped with necessary holes but not yet completed. Fig. 6 shows a side view of said pressure lever, but without the auxiliary spring riveted thereon. Fig. 7 shows an

end of Fig. 6. Fig. 8 shows a view of a knurled regulating nut.

Referring in detail to the drawings, the brush-holder proper 1 consists of a piece of sheet metal shaped in blank as shown in Fig. 1, the same being desirably provided with a large notch 3 cut into the middle portion of one of the longer edges, and a small screw hole 2 opposite notch 3. Said piece of sheet metal is also provided with the corresponding oblong holes or slots 4, one near each end thereof, and the small holes 5 and 6 at the corners thereof.

Referring more particularly to Figs. 2, 3 and 3<sup>a</sup>, a brush-holder in its completed form consists of a strip of sheet metal which is bent to provide, as seen at the left end of Fig. 2, a rectangular holder in which is seated the brush 7 as shown in Fig. 3. The brush-holder proper 1 is bent to provide the same with lateral seats into which the brush fits and oppositely disposed arms through the openings 4 of which extends the threaded stud 8. Between said arms said stud is surrounded by a sleeve 13, said arms being adjustably clamped to said stud by the nuts 14. The stud 8 is mounted on an arm 11 provided with a slot 11<sup>a</sup> through which the stud extends, said stud being desirably held in place on said arm by the clamping nuts 9 which screw down upon the insulated washer 10 at either side of the arm 11.

12 designates the armature, a portion only of which is shown.

It will be seen, (Fig. 3) that the pigtail 15 is attached to the upper part of the brush 7 by a screw 24, the notch 3 permitting the brush to lower considerably as it becomes worn. The other end of the pigtail is attached to the brush-holder proper by means of a screw which enters the hole 2.

As a means of forcing the brush into contact with the commutator and maintaining a pressure on said brush, I have provided a lever 16, fulcrumed on rod 22, auxiliary springs 17 fulcrumed on rod 22, and spiral spring 19. One end of said spiral spring 19 is fastened to a rod 23, (Fig. 2) and the other end of said spiral spring is fastened to one end of a small threaded stud 18, (Fig.



4). Said stud passes through a hole 25 in lever 16, and is provided with a nut 27, one side of nut resting on top of lever 16. Lever 16 may be fastened to spring 17 by a rivet 5 21.

To prevent nut 27 from working loose after once having been properly adjusted, I have provided a small groove 19<sup>a</sup> on one side of said nut, which corresponds to a 10 raised notch 30 in the lever 16, the tension of spring 19 preventing nut 27 from turning when the notches 19<sup>a</sup> and 30 are in register.

The object of allowing the lever 16 to project out over the top of auxiliary spring 15 17 and brush 7, is to provide a weight following said spring 17, and also to provide a means for lifting the lever from the brush.

Having described my invention, what I claim as new, and desire to secure by Letters Patent are:—

1. In a brush-holder, the combination, with a supporting stud-pin, of a holder having arms provided with oppositely disposed holes through which said stud-pin extends, 25 and means for clamping said holder to said pin, said holes being larger than said pin to permit the position of the holder to be varied before the same is clamped in place.

2. The combination, with the brush- 30 holder proper, of a threaded stud, means to adjustably secure said holder on said stud, a lever fastened to said holder, said lever having a thin resilient spring fastened thereto and projecting toward its free end, that 35 end of the lever through said resilient spring resting on the brush, means to pivotally fasten said lever to the brush-holder proper, and a spring connecting the brush-holder proper and said lever to tend to move the 40 free end of the lever toward the brush.

3. The combination in a brush-holder, of a piece of sheet metal, a threaded stud, a

tube fitting loosely on said stud, and nuts on said threaded stud facing said tube to fasten said holder on said stud, substantially 45 as described.

4. The combination in a brush-holder, of a piece of sheet metal with two opposite limbs to constitute the holder itself, a 50 threaded stud, a tube to fit over said stud, nuts to fit stud, a lever of sheet metal to fit between the limbs of said holder, a threaded stud through said lever, a nut to fit said stud that goes through the lever, and a spiral spring fastened on one end of the 55 stud going through the lever, the other end of the spring being fastened to a rod fastened on said sheet metal holder.

5. The combination with the brush-holder proper manufactured of sheet metal, of a 60 threaded stud, a tube fitting on said stud, two nuts fitting on said stud to hold said tube in place, a lever of sheet metal, one end of said lever resting on a fulcrum fastened to the sides of said holder, said lever 65 having a thin resilient spring fastened to one end, the end of the lever to which said resilient spring is fastened being thereby supported on the brush, a stud passing through a hole in said lever, a nut on the 70 end of said stud above said lever, a spiral spring fastened to the other end of said stud, a rod made fast to said sheet metal holder, one end of said spring being fastened to said rod to maintain a pressure of 75 the brush on the commutator, and means to prevent said stud from working loose.

In witness that I claim the foregoing I have hereunto subscribed my name this 15th day of Feb., 1909.

CARL E. JOHNSON.

Witnesses:

W. W. TIDDINGTON,  
ERNEST L. GIELOW.