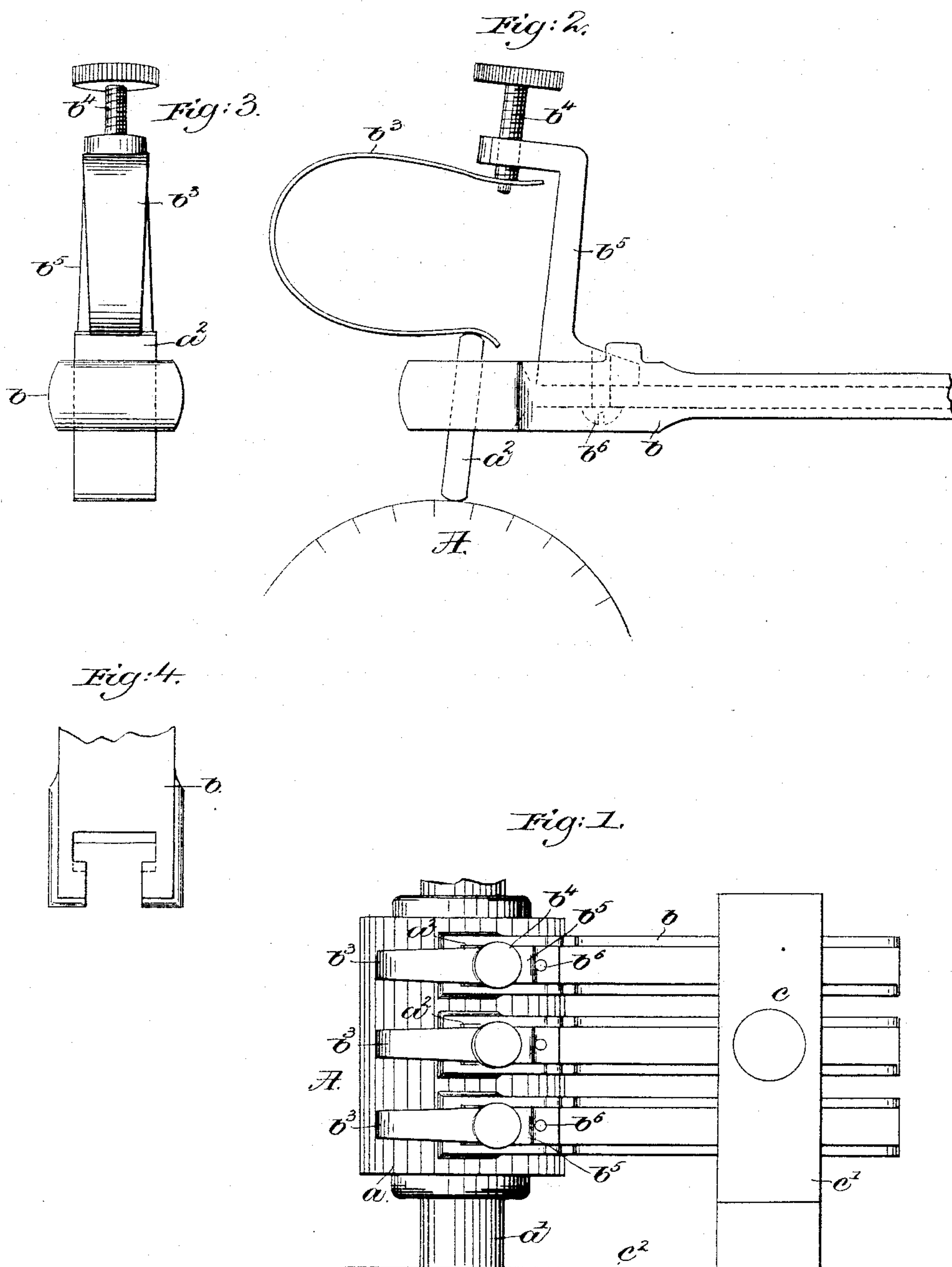


(No Model.)

E. A. SWEET.
BRUSH HOLDER FOR ELECTRIC MOTORS.

No. 437,946.

Patented Oct. 7, 1890.



Witnesses.

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UNITED STATES PATENT OFFICE.

EDGAR A. SWEET, OF MILFORD, MASSACHUSETTS, ASSIGNOR OF ONE-HALF
TO CHARLES W. SHIPPEE, OF SAME PLACE.

BRUSH-HOLDER FOR ELECTRIC MOTORS.

SPECIFICATION forming part of Letters Patent No. 437,946, dated October 7, 1890.

Application filed May 31, 1890. Serial No. 353,855. (No model.)

To all whom it may concern:

Be it known that I, EDGAR A. SWEET, of Milford, county of Worcester, State of Massachusetts, have invented an Improvement in Brush-Holders for Electric Generators and Motors, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

10 This invention relates to a novel commutator-brush and holder for electric generators and motors.

Electric generators and motors as now commonly constructed are provided with copper brushes, which lie in a substantially horizontal position with relation to the commutator, so that as the said brushes become worn the surface in contact with the commutator-segment is extended or enlarged and makes contact with an adjacent commutator-segment, thereby causing sparking at the brushes, and consequently wear upon the brushes and commutator. The copper brushes referred to when worn are removed from the machine and ground until their contacting surface is of normal size, the said grinding not only increasing the cost of running the electric generator or motor on account of the time consumed in grinding, but also on account of the waste of stock—that is, of the said brush.

My invention has for its object to provide a brush-holder of novel construction capable of being applied to any of the well-known type of machines now in use, and with which a carbon-brush may be used, the said brush-holder being constructed, as will be described, so that the ends of the brushes on opposite sides of the commutator will bear upon the same number of segments of the commutator, and when worn the contacting faces of the brushes will remain of substantially the same area in cross-section, and as a result the said brushes will not spread over more segments of the commutator than the brush when first placed in position, thus obviating sparking at the brushes and cutting of the commutator and avoiding waste of the brush by grinding.

The particular features of my invention

will be pointed out in the claims at the end 50
of this specification.

Figure 1 is a top or plan view of a sufficient portion of an electric generator or motor provided with my improved brush-holder and its brush to enable my invention to be understood; Fig. 2, a side view, on an enlarged scale, of the brush-holder and brush shown in Fig. 1; Fig. 3, an end view of the brush-holder and brush shown in Fig. 2, and Fig. 4 a modification, to be referred to. 55

The commutator A, composed of insulated segments a , mounted on the armature-shaft a' of an electric generator or motor, (not shown,) has co-operating with it, as shown in Fig. 1, three brushes a^2 , preferably of carbon. 65 Each carbon brush a^2 , preferably oblong in shape, but which may be round or of other shape, is held in a substantially vertical plane in contact with a commutator-segment a by my improved brush-holder, preferably made 70 as a metallic bar b , provided at its end with a guideway, (shown as a slot b'), through which the brush a^2 is extended. The brush a^2 is loosely fitted in the slot b' , and is normally kept in engagement with the commutator by a tension device, herein shown as a flat spring b^3 , having one end connected to an adjusting-screw b^4 , extended through a threaded opening in an arm or bracket b^5 , secured to or forming part of the brush-bar b , it being herein shown as secured to the said bar by screw b^6 . (See dotted lines, Fig. 2.) The flat spring b^3 is bent or bowed, and its inner end rests upon one end of the brush a^2 and forces the said brush through the slot in the brush-holder into contact with the commutator. The brush a^2 , preferably of carbon, but which may be made of copper and like material, is herein shown as oblong in shape, and is of such thickness in the direction of its transverse axis that the end of the said brush bears against or makes contact with only one segment, as clearly represented in Fig. 2. As the brush a^2 is worn, its contacting face or end does not increase to such extent as to overlap an adjacent segment a of the commutator, and consequently sparking at the brushes is obviated. 95

My improved brush-holder is detachably secured, as by screw *c*, the usual brush-holding arm *c'*, secured to or forming part of the usual yoke *c''*, pivotally supported on the armature-shaft *a'*.

The detachable brush-holder may be readily adjusted in the arm *c'* to adjust the carbon brush with relation to commutator-segments, and when a plurality of brush-holders are used each brush-holder may be adjusted independently of the other.

My improved brush-holder may be readily applied to any machine without change of parts so that the said machine may be supplied with a carbon brush.

The spring *b''* serves to carry the current to the carbon brush *a''* when the machine is used as a motor, and is adjustable to permit the carbon brush to be used on machines having commutators of varying diameter.

Instead of making the guideway for the carbon brush as a slot in the bar *b*, it may be made in the ends of the bar, as shown in Fig. 4.

I claim—

1. In an electric generator or motor, the combination, with a brush-holding arm *c'*, of an independent brush-holder *b*, detachably secured thereto and longitudinally adjustable

therein, provided with a guideway, a substantially vertical brush inserted through said guideway, a bracket on said arm, a screw extended through said bracket, and a spring having one end secured to said screw and its other end pressing upon the upper end of the said brush, substantially as described.

2. In an electric generator or motor, the combination, with a brush-holding arm, as *c'*, of a series of independent detachable brush-holders longitudinally adjustable therein, each consisting of a bar *b*, secured to said arm, a bracket attached to each of said bars, a substantially vertical carbon brush carried by said holder, and an adjustable spring secured to said bracket at one end and having its other end pressing upon the top of the carbon brush to keep it in contact with the commutator of the generator or motor, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDGAR A. SWEET.

Witnesses:

JAS. H. CHURCHILL,
EMMA J. BENNETT.