

No. 662,630.

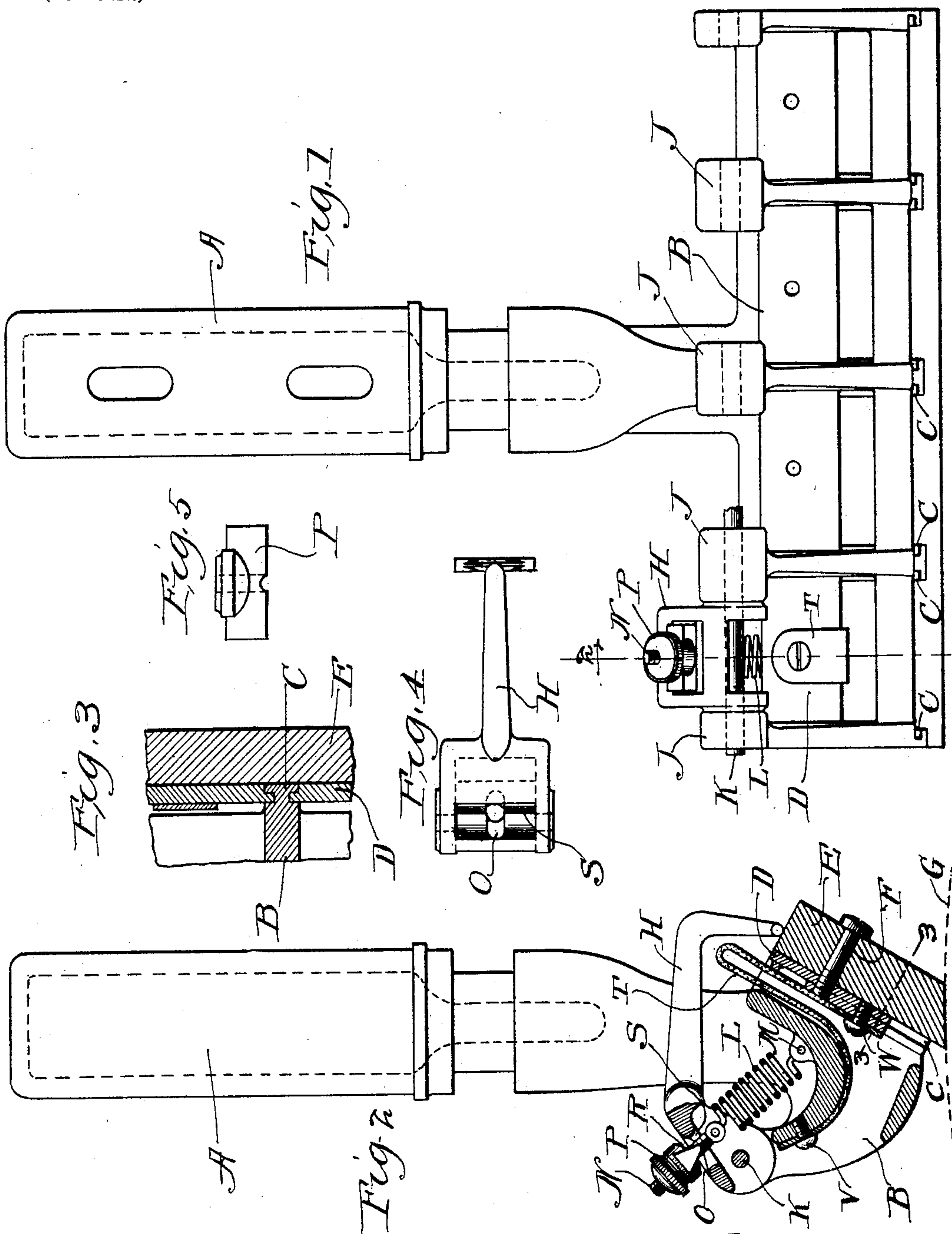
Patented Nov. 27, 1900.

S. H. SHORT.

BRUSH HOLDER FOR ELECTRIC MACHINES.

(Application filed July 28, 1898.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE WESTINGHOUSE ELECTRIC AND MANUFACTURING COMPANY, OF PITTSBURG, PENNSYLVANIA.

BRUSH-HOLDER FOR ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 662,630, dated November 27, 1900.

Application filed July 28, 1898. Serial No. 687,078. (No model.)

To all whom it may concern.

Be it known that I, SIDNEY H. SHORT, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Brush-Holder for Electric Machines, of which the following is a specification.

This invention relates to brush-holders for electric machines.

One object of the invention is to provide a brush-holder of simple and improved construction wherein the brushes are efficiently held to their work against the commutator with uniform pressure notwithstanding the wear of continued use.

Other objects of the invention will appear more fully hereinafter.

The invention consists, substantially, in the construction, combination, location, and relative arrangement, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally specifically pointed out in the appended claim.

Referring to the accompanying drawings, and to the various views and reference-signs appearing thereon, Figure 1 is a view in side elevation of a brush-holder embodying the principles of my invention. Fig. 2 is a transverse sectional view of the same on the line 2 2, Fig. 1. Fig. 3 is a broken detail sectional view through the brush-holder on the line 3 3, Fig. 2, showing the manner of mounting the brush. Fig. 4 is a detached detail view in plan of the brush-holder lever. Fig. 5 is a detached detail view of the wedge-washer.

The same part is designated by the same reference-sign wherever it occurs throughout the several views.

Reference-sign A designates the brush-holder frame, suitably constructed and adapted to be mounted in the rocker-ring of an electric machine in the usual or any convenient manner. The brush-holder frame includes a suitable casting B, formed into one or more compartments, as indicated in Fig. 1, each adapted to receive a brush. In the particular form shown the casting B is divided into four compartments, though it is evident that only one or any number of compartments may

be employed. In the side walls of each compartment of casting B are suitably-formed grooves or ways C, in each pair of which is mounted to slide a plate D. To each plate D is suitably secured a brush E—as, for instance, by means of bolt F, Fig. 2, or otherwise—the lower end of such brush being arranged to contact with the surface of the commutator, (indicated by dotted lines at G, Fig. 2.) Pivotaly mounted adjacent to each compartment of casting B is a lever H, said lever being pivotaly mounted at one end upon the casting and suitably bent at the free end thereof to bear upon the end of the brush E. In the particular form shown and where the casting B is provided with several compartments I form suitable ears J in projections of the casting, and I mount a pin or rod K in said ears, and upon this rod or pin the several levers H are pivotaly mounted. The levers H are yieldingly pressed upon the outer ends of the brushes, so as to hold said brushes into efficient contact with the commutator-surface, by means of a spring L, suitably connected at one end, as at M, to casting B and at the other end connected to a threaded stud N, arranged to pass freely through the opening O, formed in lever H. Upon this threaded stud or bolt N is mounted a suitable nut P. By screwing said nut on or off the threaded stud or bolt the tension of spring L may be readily regulated, thus regulating the pressure exerted by lever H upon the brush E. In order that lever H may not be obstructed in the free movement thereof, I provide nut P with a winged knife or wedge-shaped portion R, which is arranged to take bearing upon the surface S of lever H, adjacent to the slot O therein, and said surface S, as clearly indicated in Figs. 2 and 4, is suitably depressed, thereby forming a seat to receive the bearing edge of wedge or knife shaped projection R of the nut.

From the foregoing description it will be seen that the lever H bears yieldingly upon the brush under the influence of spring L and that the tension of such spring may be readily and easily regulated, thus regulating and controlling the pressure by which the brush is held into contact with the commu-

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tator-surface of the electric machine, the tension of said spring being applied to said lever intermediate the free end thereof and the point of its pivotal support. Thus the brush
5 is efficiently held to the commutator-surface whatever the wear thereon may be.

In order that the current may find a ready and easy path notwithstanding the advancement of the brush as it wears away and in
10 order that such path may remain constant as to cross-sectional area and may follow readily and easily the advancing movement of the brush, I provide a flexible conducting-cable (indicated at T, Fig. 2) suitably connected
15 or attached, as at V, at one end of such cable to casting B and at the other end thereof, as at W, to the plate D, to which the brush is secured. By this construction it will be seen that the brush is held by a constant pressure
20 to the commutator-surface notwithstanding the constant wear thereon and that as it is advanced to compensate for wear there is no impairment of the circuit through such brush. It will also be seen that by connecting the
25 brush to the slide D and mounting said slide in the ways C the brush is efficiently mounted and held.

Having now set forth the object and nature

of the invention and a form of apparatus embodying the same and having described the
30 construction, function, and mode of operation thereof, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent of the United States, is—

In a brush-holder, a frame having one or more compartments, a brush mounted to slide in ways in each compartment, a lever pivotally mounted at one end upon said frame and arranged to bear at its free end upon said
40 brush, a stud or bolt arranged to pass freely through a perforation in said lever, a spring connected at one end to said frame and at the other end to said stud or bolt, a nut having wedge-shaped portions mounted on said stud
45 or bolt, the surface of said lever adjacent to the perforation therein being formed into a seat to receive the bearing edge of said wedge, as and for the purpose set forth.

In witness whereof I have hereunto set my
50 hand, this 25th day of July, 1898, in the presence of the subscribing witnesses.

SIDNEY H. SHORT.

Witnesses:

M. A. KENSINGER,
JOHN J. BEVER.