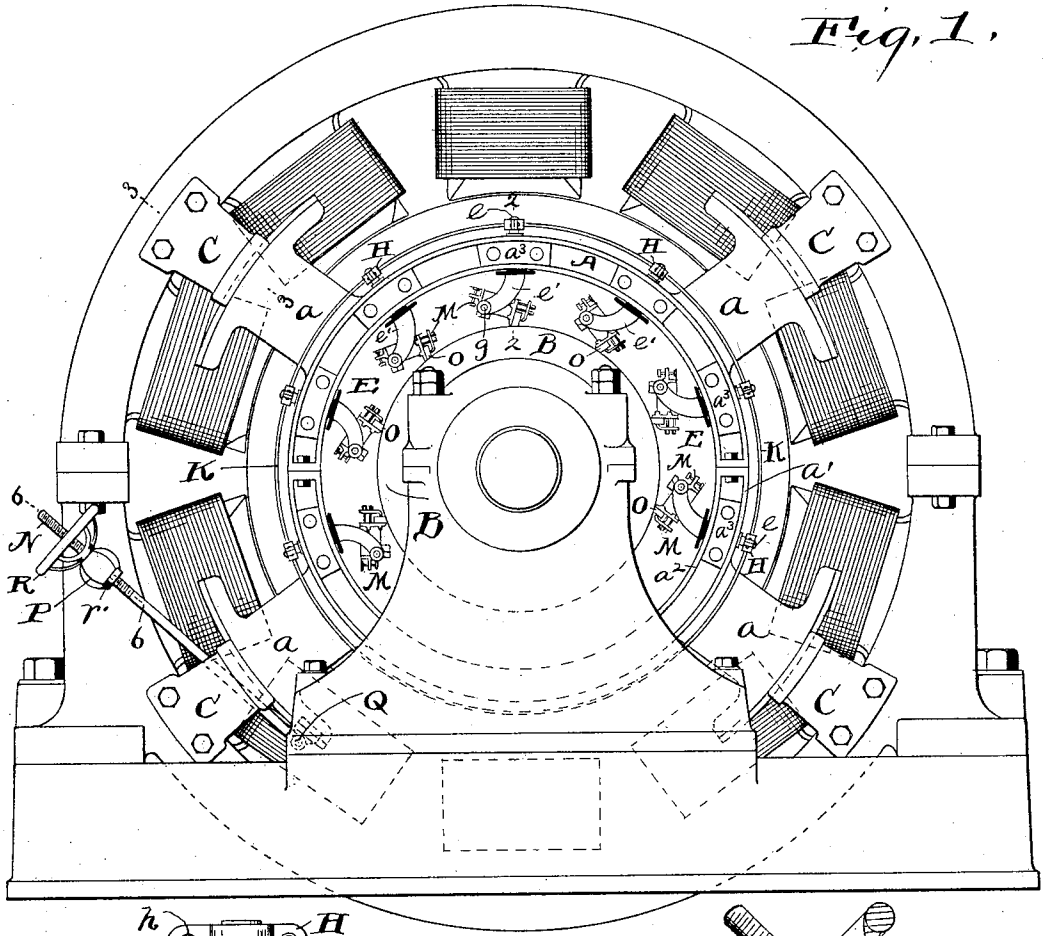
(No Model.)

S. H. SHORT.

BRUSH HOLDER SUPPORT FOR ELECTRIC GENERATORS OR MOTORS.

No. 588,490. Patented Aug. 17, 1897.

Fig. 1.



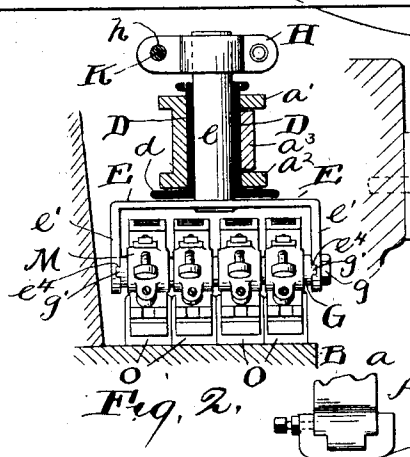


Fig. 2.

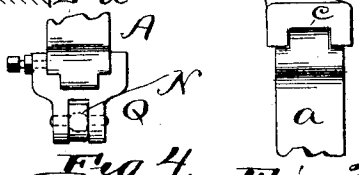


Fig. 4.

Fig. 3.

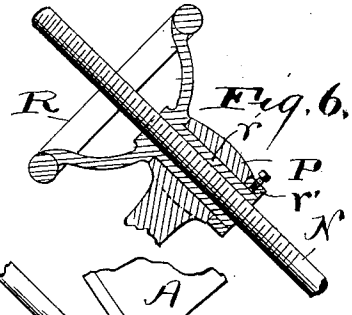


Fig. 6.

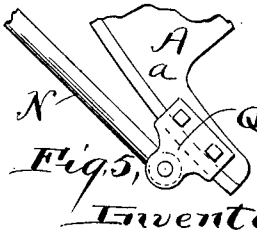


Fig. 5.

Witnesses:
E. B. Gilchrist
H. M. Hutchison.

Inventor:
Sidney H. Short
By E. L. Thurston
his atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

SIDNEY H. SHORT, OF CLEVELAND, OHIO.

BRUSH-HOLDER SUPPORT FOR ELECTRIC GENERATORS OR MOTORS.

SPECIFICATION forming part of Letters Patent No. 588,490, dated August 17, 1897.

Application filed January 2, 1897. Serial No. 617,363. (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 certain new and useful Improvements in Brush-Holder Supports for Electric Generators or Motors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to those parts of an electric generator or motor by means of which the brush-holders are supported in such manner that the brushes will properly contact with the commutator.

The parts referred to include the rocker, its supports, and the means for adjusting it, the brush-holder hangers, and their connections with the rocker.

The invention consists in the construction and combination of said parts with each other and with the commutator and framework of the machine, all of which will be hereinafter fully described and claimed.

In the drawings, Figure 1 is an end elevation of an electric generator equipped with my invention. Fig. 2 is a sectional view on the radial line 2 2 of Fig. 1. Fig. 3 is a sectional view on line 3 3 of Fig. 1. Fig. 4 is an end view of the clamp Q and a part of the rocker to which the clamp is attached. Fig. 5 is a side view of said clamp and rocker-arm, and Fig. 6 is a sectional view on line 6 6 of Fig. 1.

Referring to the parts by letters, A represents a ring-shaped rocker which is mounted concentrically with the commutator B in the ends of the stiff arms C. These arms are rigidly fixed to the frame of the machine, and their ends, which are arranged concentrically with the commutator, are extended into a transverse plane which cuts the commutator about midway between its ends. These arms are provided with grooves *c* near their ends, which receive the edges of the rocker-ring. The parts of the rocker-ring which lie and move in these grooves must be cylindrical, but the other parts of said ring may be of any desired form. In the embodiment of the invention shown the parts of the rocker which engage in said arms C are the segmental-shaped ends of the radial arms *a*, which project outward from the main body of said rocker.

At suitable regular intervals the flanges a' a^2 are formed on the rocker, and these flanges are radially perforated at regular intervals to permit the passage of the insulating-sleeves D, which sleeves are secured to the rocker by the clamp-plate a^3.

The brush-holder hanger E has a stem *e* and two forks e' e'. Each of the stems passes entirely through one of the sleeves D. The stem *e* fits the sleeve D tightly, and the clamp-plate a^3 holds both rigidly upon the rocker-ring. A flange *d* on the inner end of the sleeve prevents the contact of the forks of the hanger with the rocker-ring. By reason of the described construction the stems *e* are all in radial positions with respect to the commutator.

The outer end of the stem *e* is embraced by a clamp H, which may be adjusted thereon, and the cross connecting-bars K for connecting the different brushes are secured in eyes *h* in these clamps.

The described means for connecting the brush-holder hangers with the rocker-ring may be varied without avoiding the primary invention, as broadly claimed; but the means shown are simple, effective, and easily operated and to them is due this distinct advantage, viz: that by loosening the clamp-plate a^3 and the clamp H the sleeve D and hanger E may be adjusted radially toward and from the commutator, the stem *e* slipping in clamp H, whereby it is unnecessary to bend the cross connecting-bar K, which is connected to the hanger-stem.

A sleeve G is extended between the ends of the two forks e' e', and it is held in place by a bolt *g*, which passes through one fork and screws into the other. In the proximate faces of the two forks the grooves e^4 e^4 are cut, and on the ends of the sleeve G are formed the tongues g' g', which fit these grooves. This construction prevents the sleeve, to which the brush-holder M is attached, from turning in the forks, and yet it permits the easy removal of said sleeve.

In all prior constructions of devices corresponding to those hereinbefore described the rocker-ring has been mounted not around the commutator, but at one end thereof. In

order that the brushes could properly contact with the commutator, the brush-holders have been secured to arms or rods which project laterally from the rocker-ring. These arms in use would spring or bend, and it has therefore been impossible in all cases to obtain uniform and continuous pressure of the brushes upon the commutator. This desirable result is invariably obtained by the construction described, because the brush-supporting devices do not include any laterally-extended arms which may bend or give, but, on the contrary, the stems of the brush-holder hangers project radially outward and are directly connected with the rocker-ring, which, as before stated, is placed about midway between the ends of the commutator.

The adjustment of the rocker-ring is effected by a threaded rod N, which is pivoted in a nearly tangential position to an adjustable clamp Q, which is secured to the rocker-ring. This rod N extends through the threaded hub r of the hand-wheel R. This hub is mounted in the end of a stud P, which is swiveled to the frame of the machine, from which it projects horizontally. The sleeve r is prevented from moving longitudinally in the stud P by a collar r', secured to it, and by the hub of the hand-wheel.

By referring to Fig. 1 it will be seen that the brush-holders M are connected to the hangers E in such position that radial planes which pass centrally through the stems e will likewise pass centrally through the surfaces of the brushes O, which contact with the commutator. Because of this construction and arrangement of these parts the radial adjustment of any of the brush-holder hangers to compensate for wear of the commutator will have no effect in relatively changing the points at which the various brushes contact with the commutator. With the constructions heretofore used it has required the greatest of care to prevent the shifting of the brushes upon the commutator-surface when said brush-supporting devices were severally adjusted for the purpose stated.

Having described my invention, I claim—

1. In an electric generator or motor, the combination of an adjustable rocker mounted concentrically with the commutator, and a plurality of radially-adjustable brush-holder hangers, substantially as and for the purpose specified.

2. In an electric generator or motor, the combination of the commutator, a plurality of fixed arms the ends of which are arranged in an annular concentric row around the commutator and in a transverse plane about midway between its ends, and a rocker-ring mounted in grooves in said arms near their ends whereby said rocker-ring is in a vertical plane between the ends of the commutator, with brush-holder hangers secured to said rocker-ring and extended therefrom directly inward toward the commutator.

3. In an electric generator or motor, the combination of the commutator, fixed arms projecting from their support in a concentric row around the commutator, and a rocker mounted in the ends of said arms, with a plurality of insulating-sleeves secured to said rocker, and brush-holder hangers having shanks which are secured in said sleeves, substantially as and for the purpose specified.

4. In an electric generator or motor, the combination of the commutator, and a rocker-ring mounted concentrically with the commutator and in a plane between its ends, with a plurality of radial insulating-sleeves, clamps for adjustably securing them to the rocker, brush-holder hangers, each having a shank which is secured in and passes through one of the sleeves, and clamps for the cross connection-bars adjustably secured to the outer ends of said shanks, substantially as and for the purpose specified.

5. In an electric generator or motor, the combination of the commutator, a concentric adjustable rocker, radially-adjustable hangers secured to said rocker, brushes and brush-holders secured to the hangers, the brush-holders and brushes being arranged substantially as described, whereby the radial plane in which the hangers are adjustable passes approximately through the middle of the surfaces of the corresponding brushes in contact with the commutator, substantially as and for the purpose specified.

6. In an electric generator or motor, the combination of a brush-holder hanger having two fork-arms which are grooved upon their proximate faces, a tube having tongues on its ends, and a retaining-rod passing through said tube and securing it to the fork-arms, substantially as and for the purpose specified.

7. In an electric generator or motor, in combination, a commutator, brush-holder hangers arranged in lines radial with reference to the axis of rotation of the commutator, and means for adjusting said hangers toward and from the commutator, substantially as and for the purpose set forth.

8. In an electric generator or motor, in combination, a commutator, a ring mounted concentric therewith, and in a plane transverse with respect thereto and intermediate the ends thereof, brush-holder hangers mounted radially therein, and means for adjusting said hangers, substantially as and for the purpose set forth.

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

SIDNEY H. SHORT.

Witnesses:
E. L. THURSTON,
E. B. GILCHRIST.