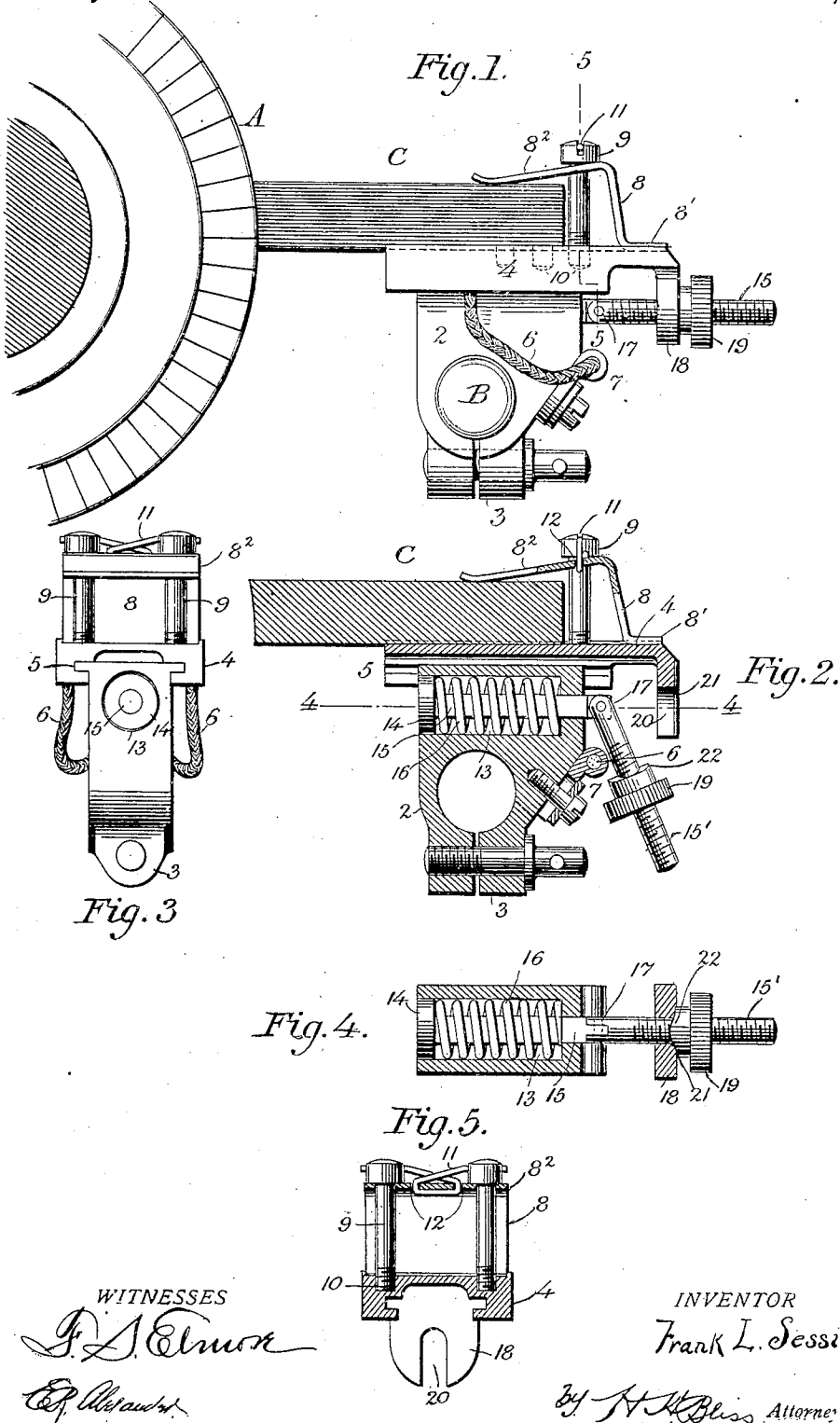


F. L. SESSIONS.
BRUSH HOLDER FOR ELECTRIC CONDUCTORS.
APPLICATION FILED MAR. 8, 1902.

972,655.

Patented Oct. 11, 1910.



WITNESSES

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UNITED STATES PATENT OFFICE.

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BRUSH-HOLDER FOR ELECTRIC CONDUCTORS.

972,655.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK L. SESSIONS, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Brush-Holders for Electric Conductors, of which the following is a specification, reference being had therein to the accompanying drawing.

In the accompanying drawings, Figure 1 is a side view of a holder for a commutator brush embodying my improvements. Fig. 2 is a vertical sectional view of the same, the slide on which the brush is supported being represented as disconnected from the spring which holds the brush in contact with the commutator. Fig. 3 is a front elevation of the holder, the brush being removed. Fig. 4 is a horizontal section taken on the line 4 4 of Fig. 2. Fig. 5 is a transverse section taken on the line 5 5 of Fig. 1.

In the drawings, A represents an electric conductor such as the commutator of an electric motor or a dynamo machine; B an arm or shaft upon which the brush-holder is mounted, and C the brush which is held in contact with the commutator. These parts are related to each other in any usual or preferred manner.

2 represents a supporting piece or block mounted upon the arm B to which it is secured by means of a clamp bearing 3. Upon this piece or block there is mounted a slide 4 which directly supports the brush C, and which is so mounted upon the ways 5 as to be free to move thereon toward and from the commutator. Suitable flexible conductors, 6, may unite the slide 4 with the binding posts or lead wire connections, 7. The upper or outer face of the slide is preferably flat and the brush is held thereupon by a clamp or spring plate, 8, and screws, 9, which pass through the plate and enter holes, 10, in the slide. As represented by dotted lines in Fig. 1, there are several sets of these screw holes, so that the clamp plate may be adjusted by changing the screws from one set of holes to the other, and the brush moved toward the commutator as its contact end wears away. I prefer to form the clamp, 8, of spring metal, of a shape approximating the letter Z, with its base portion, 8', resting upon the face of the slide, while its upper portion or leaf, 8², which is preferably

longer than the portion, 8', is inclined slightly downward, so that its front or edge portion only bears upon the brush C. The screws 9 pass through the upper leaf of the clamp in rear of its clamping edge.

I make provision for locking the screws so that they shall not accidentally turn and permit the clamp to become loosened. For this purpose I prefer to use an elastic wire 11, the intermediate portion of which is attached to the clamp plate by being passed through holes, 12, formed therein between the screws, and the free ends of which are arranged to enter the kerfs or slots in the ends of the screws. The ends of the locking wire may be easily removed from the slots in the screws and turned to one side thereof leaving the screws perfectly free to be adjusted by a screw-driver or wrench as may be desired.

16 indicates the spring which operates to hold the brush in contact with the commutator. It is preferably mounted in a recess, 13, formed in the supporting piece or block 2, and bears at one end against a stationary abutment at one end of the recess, and at its other end against a head, 14, at the end of the stem or connecting rod which unites the spring with the slide or carrier for the brush. The connecting rod or stem is formed of two parts connected to each other by a pivot or joint, 17, so arranged as to permit the spring to be easily and instantly disconnected from the slide whenever this is desirable. The portion, 15, of the connecting rod to which the head, 14, is secured, passes axially through the spring and out through the rear wall of the block 2, while the outer portion, 15', of the rod, which is united with the portion 15 by the joint, 17, is free to turn upon such joint and be moved into and out of connection with the slide which carries the brush.

The slide 4 is provided at its rear end with a depending arm or flange 18 with which an adjusting nut 19 mounted upon the connecting rod or stem is adapted to engage. This flange is formed with an open ended slot 20, through which the connecting rod passes, and into and out of which the rod may be freely moved accordingly as its outer portion, 15', is moved into the position indicated in Fig. 1, or that indicated in Fig. 2. The tension of the spring 16 may be

varied at will by simply turning the nut 19, but it will be understood that the movable portion of the connecting rod may be turned into position either to make or to break the connection between the spring and the slide without in anywise changing the position of the adjusting nut upon the stem or connecting rod. By moving the parts from the position indicated in Fig. 1 to that shown in Fig. 2 the slide is disconnected from the spring and is free to be moved back to carry the brush entirely out of contact with the commutator to permit the making of any changes or adjustments of parts which may be required.

I prefer that the outer face of the flange or arm 18 should be recessed adjacent to the slot 20, as indicated at 21, and that the face of the nut which engages with the flange should be provided with diametrically disposed projections 22, which are adapted to enter the recess 21 in order to prevent the nut from accidentally working loose, when the parts are in working position, as indicated in Fig. 1. The engaging faces of the projections 22 are preferably rounded or curved so that they do not prevent the nut from being turned upon the rod to effect the desired adjustments, even when the nut is in engagement with the flange or arm 18.

Having described my invention, what I claim and desire to secure by Letters-Patent is:

1. The combination with an electric collector and brush, of a movable holder for the brush, a support for said holder having a cylindrical chamber or socket with an aperture opening into the end thereof, a coiled spring in said socket, a stem engaging one end of the spring and extending through the said aperture, a threaded rod flexibly connected to the extending end of the stem, and a nut on the rod adapted to swing with the latter into and out of operative engagement with the brush holder.

2. The combination with an electric collector and brush, of a movable holder for the brush, a support for said holder having a cylindrical chamber or socket with an aperture opening into the end thereof, a headed stem disposed axially within the socket with one end extending through the aperture thereof, a coiled compression spring surrounding said stem between the head thereof and the end wall of the socket, and means for operatively connecting said stem to the brush holder.

3. The combination with an electric collector and brush, of a movable holder for the brush, a support for said holder having a cylindrical chamber or socket with an aperture opening into the end thereof, a headed stem disposed axially within the socket with one end extending through the aperture thereof, a coiled compression spring

surrounding said stem between the head thereof and the end wall of the socket, and means flexibly connected to said stem and adapted to swing into and out of operative engagement with the brush holder.

4. The combination with an electric collector and brush, of a movable holder for the brush, a support for said holder having a cylindrical chamber or socket with an aperture opening into the end thereof, a headed stem disposed axially within the socket with one end extending through the aperture thereof, a coiled compression spring surrounding said stem between the head thereof and the end wall of the socket, a threaded rod flexibly connected to said stem, and a nut on said rod adapted to swing with said rod into and out of operative engagement with the brush holder.

5. The combination with an electric collector and brush, of a supporting piece 2, a slide for carrying the brush mounted thereon, a spring arranged within a recess in the supporting piece, the stem or rod connecting the spring with the slide and formed of two parts 15, 15', united by a pivot joint, the part 15' being movable into and out of engagement with the slide and an adjusting nut upon the part, 15', of the stem arranged to bear against the slide, substantially as set forth.

6. In a holder for a brush for an electric collector, the combination of a slide, a spring for holding the brush in working position, a connecting stem or rod between the spring and the slide, and an adjusting nut upon the stem, the engaging face of the nut being provided with a projection 22 which is adapted to be seated in a recess formed in the portion of the slide with which the nut engages, substantially as set forth.

7. The combination with an electric collector and brush, of a slide upon which the brush is mounted provided with a flange having an open slot, a spring for holding the brush in engagement with the collector, a connecting rod between the spring and the slide arranged to pass through the said open slot, the said connecting rod being freely movable into and out of engagement with the slide through the open end thereof, and an adjusting nut upon the connecting rod arranged to engage with the said flange for varying the tension of the spring, substantially as set forth.

8. In a holder for a brush for an electric collector, the combination with a supporting piece upon which the brush rests, of a clamping plate formed of spring metal of substantially Z-shape having a base portion 8' arranged to rest upon the supporting piece and a spring leaf 8² inclined toward the outer face of the brush and arranged to have its outer edge only engage therewith at points opposite the said supporting piece,

and clamping screws passing through the spring leaf in rear of its engaging edge, substantially as set forth.

5 9. In a holder for a brush for an electric collector, the combination with a supporting piece upon which the brush rests, of a clamping plate arranged to hold the brush against the supporting piece, binding screws which pass through the clamping plate, and means
10 for locking the said screws comprising a spring wire, the free ends of which are adapted to enter slots in the ends of the screws, substantially as set forth.

15 10. The combination of a commutator, a brush, a movable holder for the brush, a spring, a connecting device between the spring and the holder adapted to swing into and out of operative position relative to the holder, and means carried by the con-
20 necting device for varying the tension of the spring, the connection between the said connecting device and the holder being readily separable without disturbing the adjustment of the tension varying means.

25 11. In a brush holder, the combination with a supporting and guiding piece, a brush holder slidable thereon and a brush, of the clamp for securing the brush to the holder and means for adjusting the clamp longitudi-
30 nally of the holder, substantially as set forth.

12. The combination with a supporting and guiding piece, a brush holder slidable thereon and a brush, of an adjustable clamp

for securing the brush upon the holder ar- 35
ranged to overlie the brush from the rear, and means for adjusting the clamp toward or from the commutator to accommodate the length of the brush it holds, substantially as set forth.

40 13. In a brush holder, the combination of the brush, the support for the brush, the spring adapted to hold the brush against a commutator, connections between the spring and brush, the spring clip for secur- 45
ing the brush to its support, and means for adjusting the said clip longitudinally of the said support.

50 14. In a brush holder, the combination of the brush, the support upon which the brush rests, the resilient clamp for securing the brush to the support, and means whereby said clamp may be adjusted longitudinally of said support.

55 15. In a brush holder, the combination of the brush, the support for the brush, the clip for securing the brush to the support, the screw for securing the clip to the support, and the series of screw holes adapted each to receive said screw and permitting 60
the adjustment of the clip longitudinally of the support.

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

FRANK L. SESSIONS.

Witnesses:

MARY E. DAMSEL,

H. C. FREEMAN.