

No. 747,696.

PATENTED DEC. 22, 1903.

H. GEISENHÖNER.
BRUSH HOLDER.

APPLICATION FILED DEC. 17, 1900.

NO MODEL.

Fig.1.

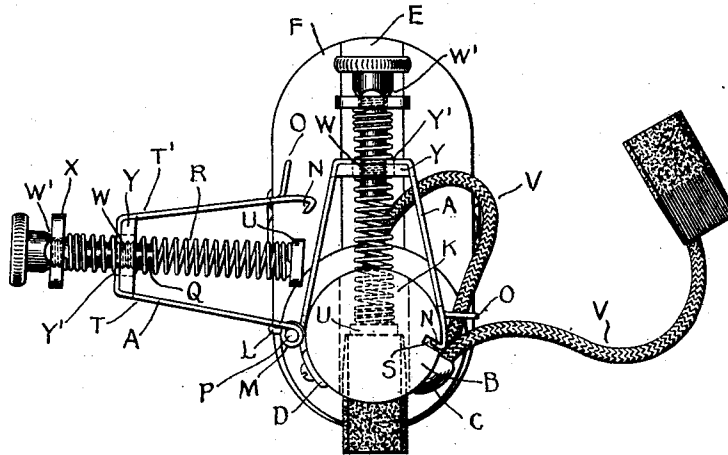


Fig.2.

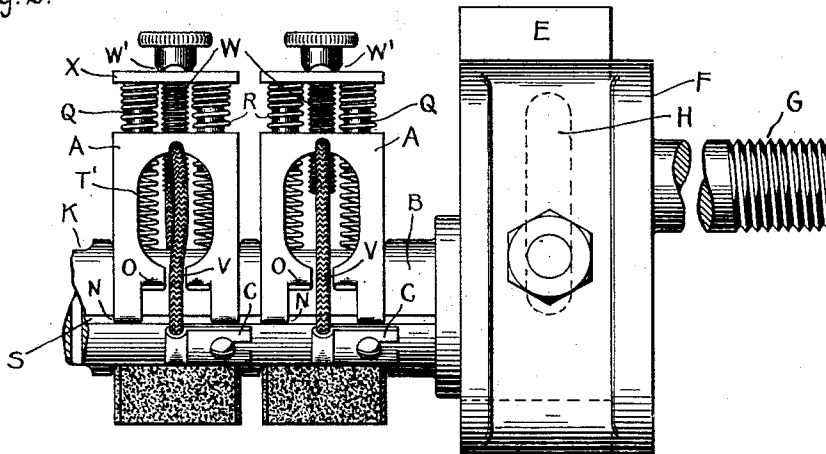


Fig. 3.

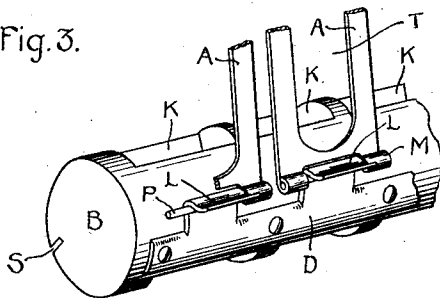
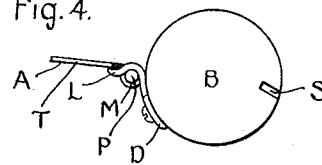


Fig. 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

HENRY GEISENHÖNER, OF SCHENECTADY, NEW YORK, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BRUSH-HOLDER.

SPECIFICATION forming part of Letters Patent No. 747,696, dated December 22, 1903.

Application filed December 17, 1900. Serial No. 40,134. (No model.)

To all whom it may concern:

Be it known that I, HENRY GEISENHÖNER, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Brush - Holders, of which the following is a specification.

This matter relates to improvements in brush-holders for electric machines.

The invention resides in the novel construction of the brush-holder, whereby it is cheaply constructed of a small number of parts and is adapted to permit the ready manipulation of the holder in any use to which it may be put.

The improvements herein described may be applied to various kinds of brush-holders; but the specific application herein is to a holder adapted to carry a plurality of brushes for use in large machines, where a great number of brushes is required.

Of the drawings, Figure 1 is an end elevation of the brush-holder, showing the parts in their operative and inoperative positions. Fig. 2 is a side elevation of a portion of the brush-holder, showing two brushes with their operating parts in their working positions, a considerable portion of the left-hand part of the holder being cut away. Fig. 3 is a detail perspective showing the main portion of the holder, and Fig. 4 is a detail showing the mode of attaching the movable parts to the main portion of the holder.

When a machine is sent from the factory, the brushes are commonly set in position and their springs adjusted with the intention that the adjustment will not be altered until it is desirable for some reason to remove the brush. As such removal is usually done by unskilled workmen and as it is essential that the brushes be maintained at a uniform pressure against the commutator or collector, I have provided means in this brush-holder whereby a brush can be readily removed without altering the tension of the adjusting-spring. Other improvements are included within the invention and most or all of them can be applied to a brush-holder with or without the above-mentioned means.

In Figs. 2 and 3 it will be seen that the main portion of the holder consists of a bar B, which

is composed of a brass casting having the holes K cast and broached therein. These holes are intended to receive the brushes, and the construction with a plurality of brushes is generally especially adapted for use with large generators or converters with which a large number of brushes is used. In Fig. 3 it will be seen that a strip D is secured to the bar and has a plurality of hook-shaped projections L. To each of these projections is hinged a device A, which serves as a device for carrying the adjusting spring or springs R for the brush. Portions M of the device A and the upper portions of the projections L are bent about the pintles P to form a hinged joint. Both the strip D and the carrying device A are punched from sheet metal. The construction of these carrying devices A is most readily seen in Figs. 1 and 2. They are punched from sheet metal and bent into trapezoidal shape, the sides being formed with holes T and T'. Between the sides and at the upper portion of the device is a metal block Y, which is secured to the cross-piece of the device and is provided with holes Y'. As described with respect to Fig. 3, the lower part of one side of the device is hinged to the strip D on the bar B. The lower portion of the other side of the device is constructed as shown in Figs. 1 and 2, projections N and O being formed. The projections or hooks N engage in a continuous slot S in the bar B and serve to lock the device in its operative position, the hooks N being held in the slot by the resiliency of the bent sheet-metal device.

As shown in Fig. 2, a screw W operates through the upper portion of the device A. Loosely mounted near the upper part of the screw is a carrier X, from which depend rods Q, which are screw-threaded at the portions which adjoin the carrier X. Helical coiled springs engage the threads of the rods Q, and are thereby held in position, the rods serving to lend rigidity to the helical springs. The lower ends of the springs are secured in a similar manner by a plate U, adapted to engage the top of the brush and which has projections extending into the springs. When the carrier device A, as shown in Fig. 1, is in its operative position, the plate U bears

on the top of the brush to force it through the hole K toward the collector of the machine. When it is desirable to remove the brush, the hook N is removed from the slot S by a pull upon the projections O, and the device A can be moved on its hinge from off the top of the holder, thus making it a simple matter to remove the brush by pulling the flexible connection or "pig-tail" V. As clearly indicated at W', the screw-head is so constructed that while it may be turned, if it is necessary for some exceptional reasons to adjust the spring, yet it cannot be turned by the vibration of the machine. Each brush should generally be provided with the flexible cable V, and in such cases the free ends of the cable are suitably secured to the bar B, as shown, by conducting-clips C.

The brush-holder above described may be adjustably secured to the machine, the end of the bar B being provided with an extension E, which can reciprocate in a support F.

The extension E is slotted at H for the reception of a bolt working through the support F. Projecting from the side of the support F is a screw-threaded stud G, which can be secured to the machine in a suitable manner. The devices A correspond in number to the number of brushes instead of being in one piece common to all the brushes, as it is frequently desirable to remove a brush for some reason while the machine is in operation, and hence it is of course undesirable to render an entire row of brushes inoperative. The flexible connection V extends through one of the holes T' in the device A to the clip C, and the space between the two projections O permits the device to be moved away from the top of the bar on its hinge unobstructed by the flexible connection V.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The combination with a bar adapted to be mounted on a suitable support, and provided with a brush-hole, of a spring adapted to bear on the brush, and a longitudinally-pivoted device for carrying the spring, which device is removably mounted on the bar, to bridge the hole.

2. The combination with a bar adapted to be mounted on a suitable support and provided with a brush-hole, of a helical spring adapted to bear on the brush, and a device for carrying the spring which is hinged to one side of the bar, and removably attached to the other side of the bar, to bridge the hole.

3. The combination with a bar adapted to be mounted on a suitable support and provided with a brush-hole, of a helical spring adapted to bear on the brush, a flexible connection for said brush, a spring-carrying device secured on opposite sides of the hole and provided with a lateral opening for the flexible brush connection.

4. The combination with a bar provided

with a brush-hole, of a helical spring, a spring-carrying device secured to the bar on opposite sides of the hole, and provided with a lateral opening, and a flexible connection from the brush which extends through said lateral opening and is secured to the bar.

5. The combination with a bar provided with a hole, of a helical spring, a spring-carrying device which is hinged to one side of the bar and is resiliently latched to the other side of the bar.

6. The combination with a bar provided with a slot, of a spring, and a spring-carrying device which is hinged to one side of the bar and has a resilient projection which engages in the slot to hold the carrying device in position.

7. The combination with a bar provided with a hole and a slot, of a spring, a resilient spring-carrying device hinged to the bar at one side of the hole, and a projection from the latter which engages in the slot on the other side of the hole.

8. The combination with a bar provided with a hole and a slot, of a spring, a resilient spring-carrying device which is hinged to the bar at one side of the hole, and has projections which engage in said slot, and has projections by which said projections can be removed from the slot.

9. The combination with a bar formed with a hole, a spring, a spring-carrying device hinged to the bar at one side of the hole and having two legs attached to the bar at the other side of the hole, each leg being provided with a projection by which the device can be removed, and a flexible connection from the brush which extends through the space between the legs and projections.

10. The combination with a bar provided with a plurality of holes for brushes, of a strip having a plurality of projections, which strip is secured to said bar, and a plurality of spring-carrying devices, each of which is hinged to one of said projections.

11. A bar having a hole for the brush, a pivoted spring-carrying device detachably mounted on the bar, a spring bearing on the brush, and means cooperating with the device and spring for adjusting the brush.

12. A cylindrical arm or bar provided with a series of holes along its length for the reception of brushes, springs bearing on the brushes, spring-carrying devices on which the springs are mounted, and means by which said devices are held on the periphery of the arm.

13. The combination with a holder, of a guide-box for the brush, a spring adapted to bear on the brush in the box, a movable device for carrying the spring, and a resilient latch for holding the device in the position in which the spring bears on the brush.

14. The combination with a holder, of a device for carrying a brush-spring, a support which is movable with respect to said device, a brush-spring mounted on said support, and

an adjusting-screw working through said device and freely engaging said support to force the latter and the spring toward the brush.

15. The combination with a holder, of a device for carrying the brush-spring and movable to permit the removal of the brush, a support movable with respect to said device, the brush-spring mounted on said support, and an adjusting-screw working through said device and freely engaging said support to force the latter and the spring toward the brush.

16. The combination with a holder, of a carrying device for the brush-spring which is perforated for the reception of said spring, a support provided with a downwardly-extending guide which projects through the perforations in said carrying device; and the brush-spring mounted on said guide.

17. The combination with a holder, of a carrying device which is perforated for the reception of the brush-springs, a support provided with two downwardly-extending guide-rods which project through the perforations in said device; and the brush-springs mounted on said rods and extending beyond the same to bear on the brush.

18. The combination with a holder provided with a brush-guide, of a carrying device, a plurality of helical springs carried by

said device, and a member to which the ends of the springs are secured and which bears on the brush in the guide.

19. The combination with a holder provided with a brush-guide, of a carrying device, a plurality of helical springs carried by said device, a member which bears on the brush in the guide, and screws which pass through said member and engage the turns of the helical springs to retain the latter.

20. The combination with a holder provided with a brush-guide, of a carrying device, a helical spring carried by said device, a member which bears on the brush in the guide, and a screw which passes through said member and engages the turns of the spring to retain the latter in position.

21. A holder having a guide-box for a brush, a spring adapted to bear on the brush in the box, and a device for carrying the spring, which is pivoted to the support at a part of the holder at one side of the box, and removably held to a part of the holder at an opposite side of the box.

In witness whereof I have hereunto set my hand this 15th day of December, 1900.

HENRY GEISENHÖNER..

Witnesses:

BENJAMIN B. HULL,

MARGARET E. WOOLLEY.