No. 728,273. PATENTED MAY 19, 1903.

E. W. MIX.

BRUSH HOLDER.

APPLICATION FILED MAR. 22, 1900.

NO MODEL.

Fig. 1.

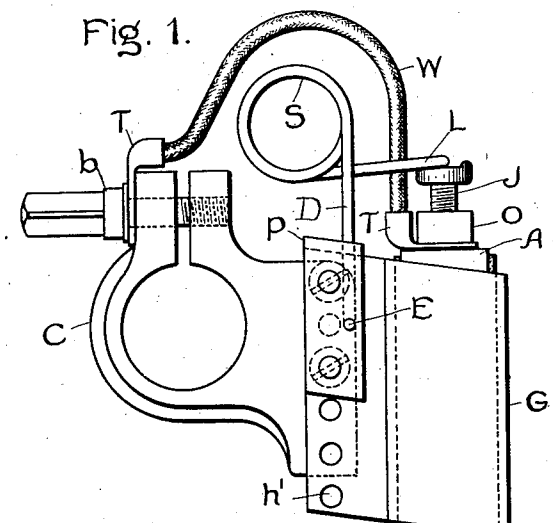


Fig. 2.

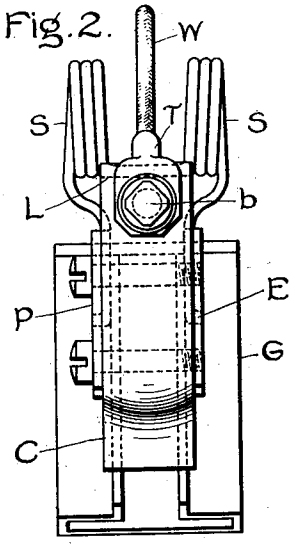


Fig. 3.

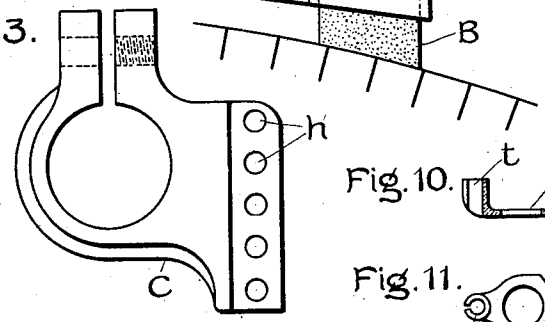


Fig. 10.

Fig. 11.

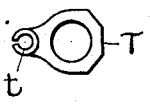


Fig. 8.

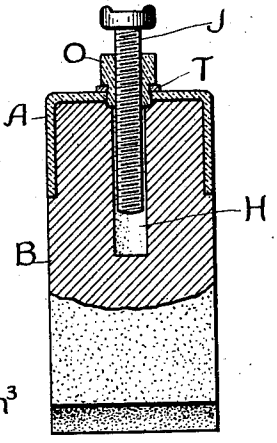


Fig. 12.

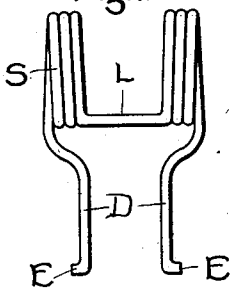


Fig. 4.

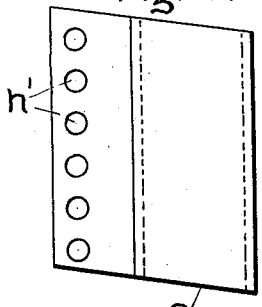


Fig. 6.

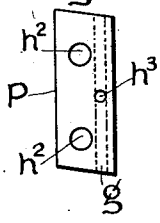


Fig. 5.

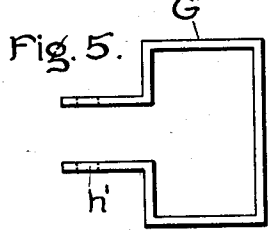


Fig. 7.

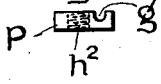
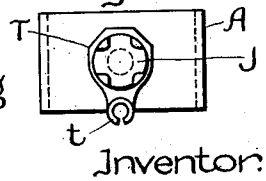


Fig. 9.



Witnesses:

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by Albert G. Davis

Atty.

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

No. 728,273. Patented May 19, 1903.

UNITED STATES PATENT OFFICE.

EDGAR W. MIX, OF PARIS, FRANCE, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

BRUSH-HOLDER.

SPECIFICATION forming part of Letters Patent No. 728,273, dated May 19, 1903.

Application filed March 22, 1900. Serial No. 9,665. (No model.)

To all whom it may concern:

Be it known that I, EDGAR W. MIX, a citizen of the United States, residing at Paris, France, have invented certain new and useful Improvements in Brush-Holders, of which the following is a specification.

This invention relates to brush-holders for electric machines and brushes adapted to said brush-holders.

Figure 1 is a side elevation of the brush-holder and brush constructed in accordance with my invention. Fig. 2 is an end view thereof, and Figs. 3 to 12 are details.

Fig. 3 is a detail of the collar C, which is adapted to be clamped to a supporting-stud by the bolt *b*, as shown in Fig. 1.

Figs. 4 and 5 are details of the guide G, formed in any suitable manner, as by drawing, to have the shape desired, adapted for the reception of the brush B. The guide G is adapted to be secured to the support C in different relative positions by means of the holes *h h'* and suitable bolts.

Figs. 6 and 7 are details of a plate P, which is provided with holes h^2, whereby it may be secured in any desired position with respect to support C and guide G in any suitable manner. The plate P is also formed with the longitudinal groove *g* and a transverse hole h^3 for the reception of a brush-spring S, to be hereinafter described.

Fig. 8 is a side view, partly in section, of a brush adapted to be used with the herein-described brush-holder; and Fig. 9 is a top view of the same.

A cap A is secured to the brush in a suitable manner, as by soldering to a copper plating on the brush. The brush, which is preferably made of carbon, may be formed with a hole H for the reception of an adjusting-screw J, which passes through a threaded collar O, secured to the cap A in any suitable manner, as shown. A terminal or clip T, formed on the end of a flexible conductor, is clamped to the brush or cap A by the collar O. This terminal T, attached to the brush, is assured freedom of vertical movement by the spring L, through the integral extensions of the guide G. (Shown in Fig. 5.) It will be noted that these extensions are continuations of the wall of the box, and in case the box is made from a strip of sheet metal the extensions are the respective ends of the blank strip. The head of the adjusting-screw J has grooves, as shown, for the reception of the spring S, (shown in Fig. 1,) in order to permit fine adjustment and prevent the spring from slipping from the screw and screw from turning.

Figs. 10 and 11 are details of the terminal T, which is punched from sheet metal and rolled up at the end *t* to form a clamp for the flexible conductor W. (Shown in Figs. 1 and 2.)

Fig. 12 is an end view of the coil-spring S, formed with a loop L, which presses on the top of the adjusting-screw J in the groove, and with the depending portions D, which extend down through the groove *g* of the plate P and terminate in the bent ends E, which project into the holes h^3 of the plate P. As shown in Fig. 1, the flexible conductor W extends from its connection with the brush to the bolt *b*, which clamps it to the support C at the same time the latter is clamped to a supporting-stud. As the brush wears away the adjusting-screw J is turned to the left to maintain a uniform tension of the spring. When the adjusting-screw is screwed out as far as desired and the brush is not yet worn away, the plate P may be mounted in a lower position than that shown in Fig. 1 on the support C and the adjustment by the screw J may be begun over again, this operation being continued until the brush is sufficiently worn away. At the same time that the plate P is changed or at any other time the guide G may be caused to take up a new position on the support C in order to guide the brush in a better manner.

This holder takes up very little space over the commutator, as it is very compact and has a very short distance between the axes of the stud and brush-guide. In practice it is preferred to make this distance uniform for all sizes of holders in order that the parts may be interchangeable.

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

1. A brush-holder which comprises a sup-

port, a guide for the brush which is adapted to be mounted on said support in different positions parallel to the path of movement of the brush in the guide, a member which is adapted to be mounted in different positions on said support, and a spring carried by said member and adapted to force the brush along the guide.

2. A brush-holder, which comprises a guide for the brush, a spring adapted to force the brush along the guide, and means carried by the brush for adjusting the tension of the spring.

3. A brush-holder, which comprises a guide, a brush therein, an adjusting-screw in the brush, and a spring bearing on the screw to force the brush along the guide.

4. The combination with a support, of a brush, a member which is adapted to be mounted on said support in different positions, a tension device carried by the brush, and a spring carried by said member and coöperating with said tension device to force the brush toward the collector of an electric machine.

5. A brush-holder, which comprises a support, a brush-guide adapted to be mounted on said support in different positions parallel to the path of movement of the brush along the guide, a supporting member adapted to be mounted on said support in different positions, in combination with a tension-adjusting device carried by the brush, and a spring carried by said member and adapted to cooperate with said tension device.

6. A brush-holder, which comprises a guide for the brush, an adjusting-screw carried by the brush and having one or more grooves, and a spring carried by said guide and bearing on the screw in one of the grooves.

7. The combination with a brush-holder for an electric machine, of a spring carried thereby, and adapted to force the brush toward the collector of the machine, and means for adjusting the spring at the portion connected with the holder, and for independently adjusting the spring at the portion which bears the brush down.

8. A brush-holder, which comprises a collar adapted to be clamped to an independent support, and a flexible conductor connected at one end with the brush, and a bolt for clamping the other end of said conductor to the collar and the collar to the independent support.

9. A brush-holder having a guide provided with extensions adapted to be attached to a support, and including between them an opening leading to the brush-containing portion, through which opening an attachment of the brush can move as the brush is moved toward the collector of the machine.

10. The combination with a brush-holder, of a coiled spring secured at its ends to the holder, and adapted to have an intermediate portion engaging the top of the brush.

11. The combination with a brush-holder, of a spring adapted to force the brush along the holder, and having its ends supported in holes on the brush-holder.

12. The combination with a brush-holder, of a spring adapted to force the brush along the holder, said spring extending into vertical grooves in the holder and having its ends bent and extending through transverse holes in the holder.

13. A brush for an electric machine, which is provided with a screw adjustable radially to the collector of the machine and adapted to be engaged by a follower, to force the brush against the collector of the machine.

14. A carbon brush for an electric machine, a screw adjustable radially to the collector of the machine and adapted to be engaged by a follower, and means attached to the brush for retaining the screw.

15. A brush for an electric machine, which is provided with a screw adjustable radially to the collector of the machine and with means secured to the brush for retaining the screw, said brush being formed with a hole for the passage of the screw.

16. A brush for an electric machine, which is provided with a screw adjustable radially to the collector of the machine, said screw being formed with a groove on its head for the reception of a spring-follower.

17. A brush for an electric machine which is provided with a metallic cap, and a collar secured to the cap and interiorly screw-threaded for the reception of an adjusting-screw.

18. A carbon brush for an electric machine, which is provided with a collar, interiorly screw-threaded for the reception of an adjusting-screw.

19. A brush for an electric machine which is provided with a collar adapted to receive an adjusting-screw, and a terminal of a flexible conductor clamped by said collar to said brush.

20. A brush-holder member which is provided with a groove, and with a hole transverse to the groove, both for the reception of a spring for the brush.

21. A separate plate adapted to be attached to a brush-holder, which is formed with a groove adapted to receive a brush-spring when the plate is attached, and with a hole transverse to the groove for the reception of a bent end of the spring.

22. In combination, a brush-holder support formed with a series of holes, and a guide also formed with a series of holes, whereby the support and guide can be secured together in different relative positions.

23. A brush-holder, which comprises a support adapted to be mounted on a suitable standard or stud, and a guide-box for the passage of the brush, which guide-box is provided with extensions having between them a space wider than the support, which extensions are attached adjustably to opposite sides of the body of the support.

24. A brush-holder, which comprises a support adapted to be mounted on a suitable standard or stud, and a guide-box for the passage of the brush having an opening from the interior of the guide toward the brush, said opening being included between extensions of the guide-box, which extensions are attached adjustably to the body of the support, whereby the support extends within said opening.

25. A brush-holder, which comprises a support adapted to be mounted on a suitable support or stud, and a guide-box for the brush which is provided with two integral extensions which are continuations of the wall of the box adjacent the brush, by which extensions the guide-box is attached adjustably to said support.

26. A brush-holder, which comprises a support adapted to be mounted on a suitable standard or stud, and a guide-box for the brush which is provided with extensions having between them a space wider than the support, which extensions are adjustably attached directly to opposite sides of the body of the support.

27. A brush-holder, which comprises a support adapted to be mounted on a suitable standard or stud, a guide for the passage of the brush, which guide is provided with extensions having between them a space wider than the support, which extensions are attached adjustably to opposite sides of the body of the support, and means tending to force the brush along the guide.

28. A brush-holder, which comprises a support adapted to be mounted on a suitable support or stud, a guide for the passage of the brush having an opening from the interior of the guide toward the brush, said opening being included between extensions of the guide, which extensions are adjustably attached to the body of the support, whereby the support extends within said opening, and means tending to force the brush along the guide.

29. A brush-holder, which comprises a support adapted to be mounted on a suitable standard or stud, a guide-box for the brush having an opening from its interior toward the support, said opening being included between extensions of the box, which extensions are attached to the body of the support, in such manner that the box can assume different positions with respect to said support, an independent member also mounted on said support, and a spring coöperating with said member and adapted to force the brush along the guide-box.

30. A brush-holder, which comprises a support adapted to be mounted on a suitable standard or stud, a guide-box for the brush having an opening from its interior toward the support, said opening being included between extensions of the box, which extensions are attached to the body of the support, in such manner that the box can assume different positions with respect to said support, an independent member also mounted on said support and adapted to assume different positions with respect thereto, and a spring cooperating with said member and adapted to force the brush along the guide-box.

31. A brush-holder having a guide-box composed of thin metal formed into the desired shape for the reception of the brush and provided with extensions by which it may be adjustably attached to its support.

In witness whereof I have hereunto set my hand this 7th day of March, 1900.

EDGAR W. MIX.

Witnesses:
A. M. TANNER,
EDWARD P. MACLEAN.