E. W. MIX.

BRUSH HOLDER.

APPLICATION FILED AUG. 17, 1904.

925,010.

Patented June 15, 1909.

Fig. 1.

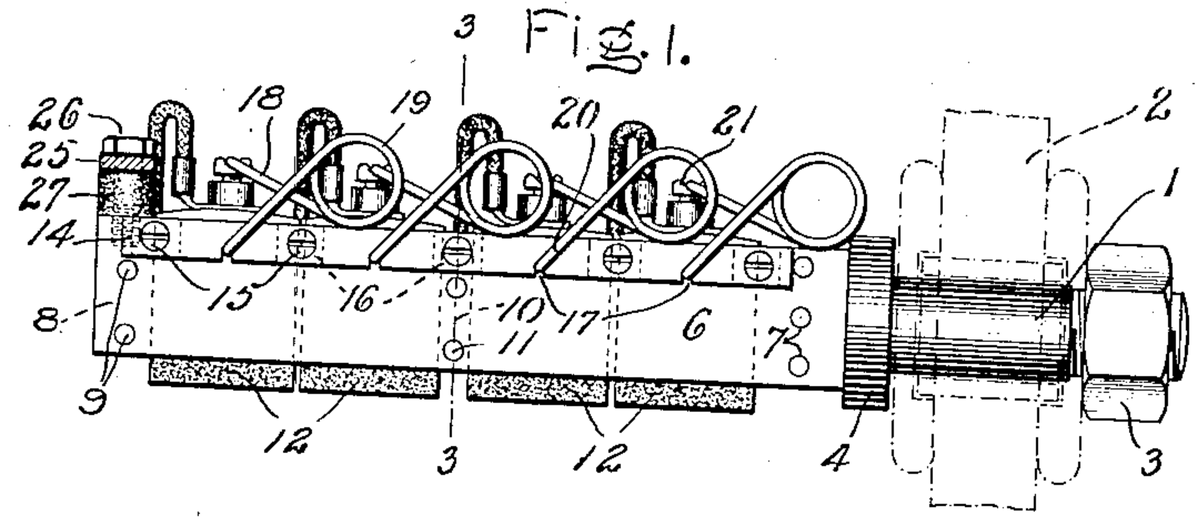


Fig. 2.

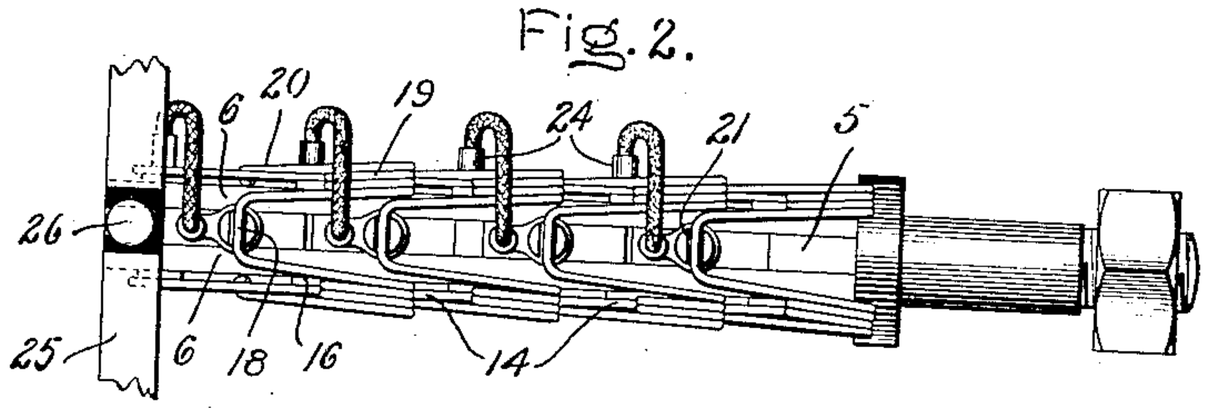


Fig. 3.

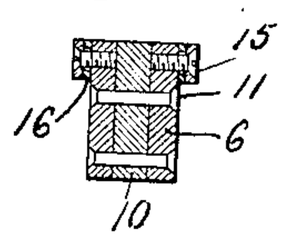


Fig. 6.

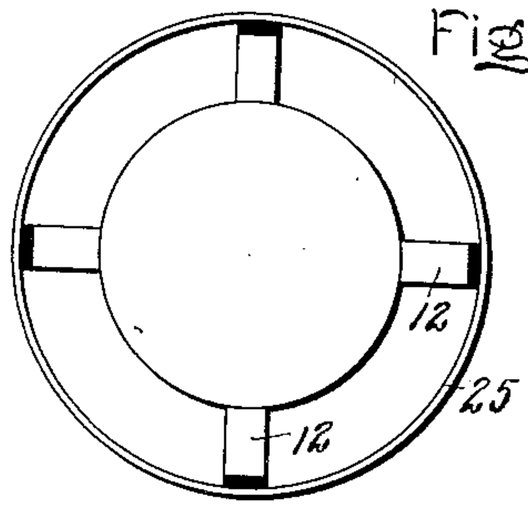
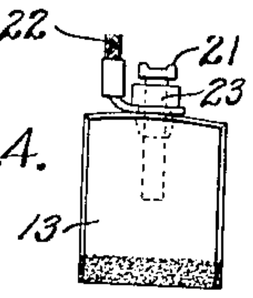


Fig. 4.



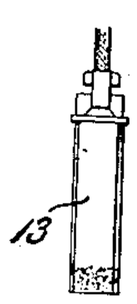
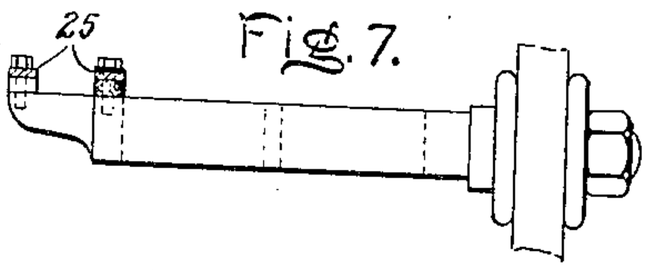


Fig. 5.

Fig. 7.



WITNESSES:

George A. Thornton.

Helen Orford

INVENTOR:

Edgar W. Mix,

By Albert G. Davis

Att'y.

UNITED STATES PATENT OFFICE.

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

BRUSH-HOLDER.

No. 925,010. Specification of Letters Patent. Patented June 15, 1909.

Application filed August 17, 1904. Serial No. 221,059.

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.

My present invention relates to brush holders for dynamo electric machines and consists in certain features of construction and arrangement whereby a compact and efficient brush holder is made.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. The invention itself, however, may be better understood by reference to the accompanying drawings and description in which I have illustrated and described embodiments of my invention.

Of the drawings, Figure 1 is an elevation of a brush holder showing a portion of the brush holder supporting device in dotted lines and in section; Fig. 2 is a plan view of the brush holder shown in Fig. 1; Fig. 3 is a section on the line 3 3 of Fig. 1; Fig. 4 is an elevation of a brush which may be employed in the brush holder; Fig. 5 is a view at right angles to Fig. 4; Fig. 6 is an end elevation showing one arrangement for supporting the inner ends of the brush holder; and Fig. 7 is a side elevation with parts in section showing another arrangement.

In the drawings, 1 represents a threaded post or bolt which is secured to the brush holder supporting yoke 2 by a nut 3, and ordinarily extends parallel to the axis of the commutator or collector ring with which the brush holder coöperates. Suitable means may be provided to insulate the stud 1 from the yoke 2. The post or stud 1 is formed with a collar 4 which bears against one side of the yoke. Beyond the collar 4 the stud 1 is provided with a flattened portion 5. A pair of plates or bars 6 which may be formed of sheet brass or other suitable material are secured to opposite sides of the flattened extension 5 by rivets 7. The other ends of the bars 6 are secured by rivets 9 to opposite sides of a block 8 which is of the same thickness as the portion 5 and may also be formed of brass. In the form of my invention shown in the drawings, a space block 10 is secured between the bars 6, midway between their ends, by rivets 11.

In the construction shown a pair of brushes 12 are located in the space between the bars 6, the extension 5 and the space block 10, and another pair of brushes 12 are located in the space between the bars 6, space block 10 and block 8. The brushes 12, which may be formed of carbon with their upper ends copper plated, as at 13, are slidingly mounted in the spaces between the plates 6.

A metal rail or bar 14 is secured to the upper and outer side of each plate 6 by screws 15. Washers or space blocks 16 surrounding the screws 15 separate the rails 14 from the plates 6. Notches 17 are formed in the under-side of the rails 14, there being as many notches in each rail as there are brushes in the holder, one notch in each rail being located midway between the edges of each brush.

A tension spring comprising a U-shaped portion 18, helical body portions 19 at the end of the U-shaped portion, and end portions 20, serves as a means for applying the proper amount of pressure to the under ends of the brushes. The ends 20 of each spring are hooked under the rails 14 engaging the walls of the notches 17 located between the edges of the brush controlled by the spring. The bowed portion 18 of the spring rests in a depression formed in the upper end of a screw 21 adjustably mounted in the upper end of the brush. In the construction shown the screw 21 is threaded into the cap 13 secured to the upper end of the structure. It will be observed that the pressure exerted on the brush by the spring is in the direction of movement of the brush, consequently the spring has no tendency to cramp the brush in its support.

One end of a flexible conductor 22 is clamped against the upper end of the cap by a nut 23 threaded on the screw 21. The other end of the flexible conductor 22 is secured in a socket 24 in any suitable manner, as by soldering, by one of the side plates 6.

To prevent vibration of the brush holder the inner ends of adjacent brush holders may be secured together. This securing means may comprise a hoop or ring 25 secured to the block 8 by bolts 26. As shown in Fig. 1 the ring 25 which is insulated from the blocks 8 is separated therefrom by a space block 27. To simplify the electrical connections the means for supporting the inner ends

of the brush holder may also electrically connect the brush holders of the same polarity. In this case I may use two rings placed side by side and secured to each block 8 which in this case is extended as shown in Fig. 7. In this case one ring 25 is electrically connected to brush holders of one potential and insulated from holders of different potential, while the second ring is electrically connected to the brush holder from which the first ring is insulated, and insulated from those to which the first brush holders are electrically connected.

While I have described the best form of my invention now known to me, it will be obvious to those skilled in the art that many changes may be made in the form of my invention without departing from its spirit.

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

1. A brush holder comprising a pair of plates separated from each other by a space in which a plurality of brushes are slidingly received, a rail or bar carried by one of said plates, and a spring for each brush, one portion of which engages the brush, and another portion of which engages said bar or rail.

2. A brush holder comprising a body portion formed with a space in which a brush is slidingly held, and a spring formed of a single piece of metal having one portion engaging the brush and other portions secured to said body portion at opposite sides of the points of engagement of the spring and brush, the points of engagement of the spring and brush and spring and body being in a plane which is parallel to the line of motion of the brush, the body of the spring being at one side of said plane.

3. In a brush holder, a pair of plates separated to form a brush receiving space, rails or bars secured to each of said plates, and a spring having one portion engaging the brush and another portion engaging said rails or bars.

4. In a brush holder, a pair of plates separated by a space in which a plurality of brushes are slidingly held, rails or bars secured to said plates, and a spring for each brush, one portion of said spring engaging said brush and other portions of said spring engaging said bars.

5. In a brush holder, a supporting stud or post, a pair of parallel plates secured thereto, a brush sliding in the space between said plates, rails secured to each of said plates, and a spring having a portion engaging said brush and other portions engaging said rails.

6. In a brush holder, a support in which a plurality of brushes are slidingly received, and a plurality of springs one for each brush, each spring having a brush engaging portion, a support engaging portion and a body portion, said engaging portions being located in a plane parallel to the line of motion of the brush and said body portion being located at one side of said plane.

7. In a brush holder, a pair of plates separated by a space, a pair of rails or bars one carried by each of said plates and separated therefrom by a space, said rails having notches formed in their under edges, a plurality of brushes located in the space between said plates, and a spring for each brush having a portion engaging the brush and other portions hooked into the notches in said rails.

8. In a brush holder, a support in which a plurality of brushes placed edge to edge are slidingly received, and a plurality of springs one for each brush, each spring having a brush engaging portion, a support engaging portion, and a body portion, said engaging portions for each spring being located in plane parallel to the line of motion of the brush engaged by the spring, and said body portion being located at one side of said plane and adjacent an adjacent brush.

9. In a brush holder, a body portion provided with a space in which a brush is slidingly held, and a coiled spring having one end in engagement with the brush and the other end in engagement with said body portion, the points of engagement of the spring with the brush and with the body portion being in a plane which is parallel to the line of motion of the brush, and the coiled portion of the spring being at one side of said plane.

10. In a brush holder, a pair of plates separated by a space, a plurality of brushes slidingly mounted in the space between the plates, and a spring for each of said brushes consisting of coiled portions arranged beside one brush and end portions engaging respectively an adjacent brush and the body portion of the holder.

In witness whereof, I have hereunto set my hand this first day of August, 1904.

EDGAR W. MIX.

Witnesses:
HANSON C. COXE,
ALFRED L. BAKER.