No. 664,649. Patented Dec. 25, 1900.

C. W. KRAGH.

BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.

(Application filed Sept. 11, 1899.)

(No Model.)

Fig. 1.

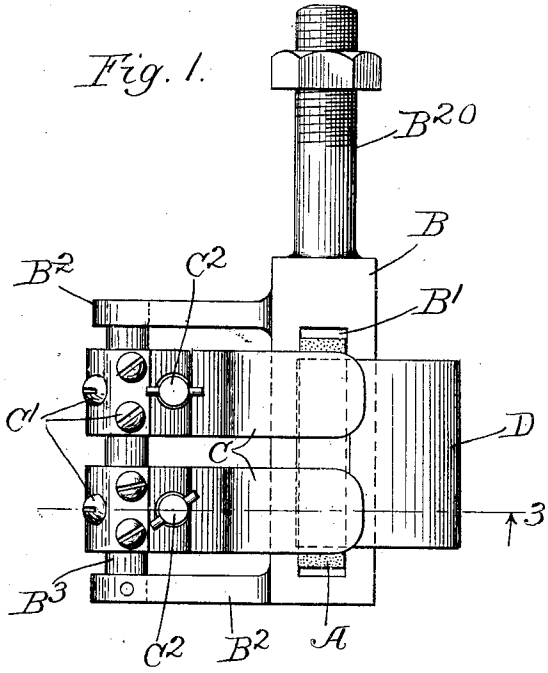



Fig. 2.

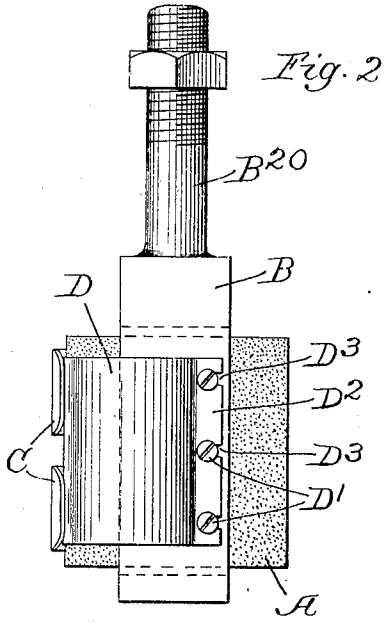



Fig. 3.

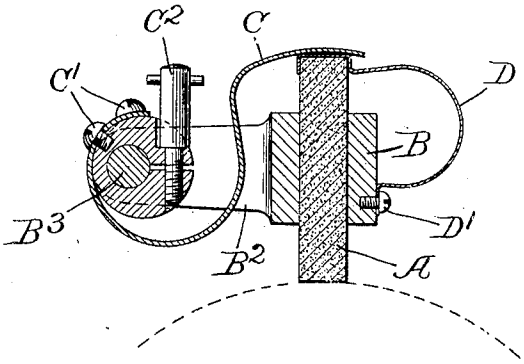
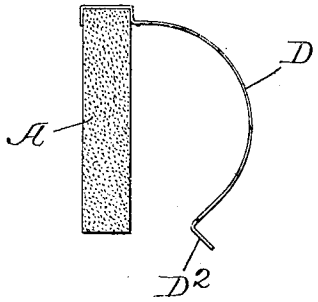



Fig. 4.




Witnesses.

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# UNITED STATES PATENT OFFICE.

CHRISTIAN W. KRAGH, OF MADISON, WISCONSIN, ASSIGNOR TO THE NORTHERN ELECTRICAL MANUFACTURING COMPANY, OF SAME PLACE.

## BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 664,649, dated December 25, 1900.

Application filed September 11, 1899. Serial No. 730,060. (No model.)

*To all whom it may concern:*

Be it known that I, CHRISTIAN W. KRAGH, a citizen of the United States, residing at Madison, in the county of Dane and State of Wisconsin, have invented a certain new and useful Improvement in Brush-Holders for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to brush-holders for dynamo-electric machines, and has for its object to provide a new and improved brush-holder of this description.

My invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a view of a brush-holder embodying my invention. Fig. 2 is a view of the brush-holder shown in Fig. 1 as seen from the top. Fig. 3 is a section on line 3 3, Fig. 1. Fig. 4 is a view showing the brush and the stationary contact-piece.

Like letters refer to like parts throughout the several figures.

In the brush-holder herein shown the brush A is movably mounted upon the holding-piece B. Said brush is loosely inserted in a slot or opening B′ and has a sliding contact with the holding-piece. One or more springs or elastic devices C are connected to the holding-piece and are associated with the brush, so as to elastically force it against the commutator. Any suitable construction for this purpose may be used. As herein shown the holding-piece is provided with two projecting pieces $B^2$ $B^2$ and a cross-piece $B^3$. The springs C are connected to the cross-piece $B^3$, their ends bearing against the end of the brush A. Any suitable means of attaching the springs may be used, and as herein illustrated I have shown each spring as associated with a split collar C′, which engages the cross-piece $B^3$. Each split collar is provided with a clamping-screw $C^2$, by means of which it may be firmly clamped upon the cross-piece. By this construction the position of the springs may be adjusted, and hence the pressure of the brush on the commutator varied. Each spring is fastened at one end to its associated split collar and passes between the projecting pieces $B^2$, the ends being bent upwardly, as shown, so as to engage the brush. The brush-holder is connected with the brush-holder ring or any other suitable supporting device associated with the machine by the supporting-arm $B^{20}$, so that it may be held in the proper position with relation to the commutator. In order to do away with the effects of a sliding contact, I provide a stationary contact-piece D, which engages the brush with a stationary contact at one end, the other end being connected with the top of the holding-piece by means of the screws D′, as shown in Fig. 2, thus forming a stationary contact therewith. This stationary contact-piece is made of flexible conducting material and may be connected with the brush in any desired manner. I have illustrated a simple construction for this purpose wherein the end of the contact-piece is bent so as to form a channel into which the end of the brush is received, the contact-piece engaging the brush at the end and on the upper and lower sides, as shown in Fig. 4. This contact-piece is bent in such a manner that the channel or space adapted to receive the end of the brush is somewhat smaller than the brush, so that when the brush is forced therein it is tightly gripped by the contact-piece. The spring or springs C then engage the end of the contact-piece and hold it firmly in position. It will be seen that by this construction the contact-piece can be easily and quickly removed from the brush and a new brush connected therewith and that a stationary contact is thus readily obtained. By this construction also the brushes can be changed without removing any screws whatever. The end of the contact-piece associated with the holding-piece B is bent at an angle with the remaining portion, as shown at $D^2$, Fig. 4, and is provided with slots $D^3$ to receive the screws D′. It will be seen that by this construction I am enabled to adjustably and elastically force the brush against the commutator and at the same time obtain stationary contacts between the parts.

I have described in detail one construction embodying my invention; but it is of course evident that the form, construction, and ar-

rangement of the parts may be varied, if desired, and I therefore do not limit myself to the construction shown.

I claim—

1. A brush-holder for dynamo-electric machines, comprising a holding-piece provided with an opening in which the brush is movably received, a contact-piece adapted to make stationary contact with the brush and with the holding-piece, said contact-piece formed to removably receive a portion of the brush, and means for elastically forcing said brush against the commutator.

2. A brush-holder for dynamo-electric machines, comprising a holding-piece provided with an opening in which the brush is movably mounted, a contact-piece bent at one end so as to form a channel in which a portion of the brush is received, so as to make stationary contact therewith, the other end of said contact-piece securely connected with the holding-piece, and a spring connected with said holding-piece and adapted to act upon the brush so as to force it toward the commutator.

CHRISTIAN W. KRAGH.

Witnesses:
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