

F. C. HANKER.
BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES.
APPLICATION FILED OCT. 7, 1908.

1,007,562.

Patented Oct. 31, 1911.

2 SHEETS—SHEET 1.

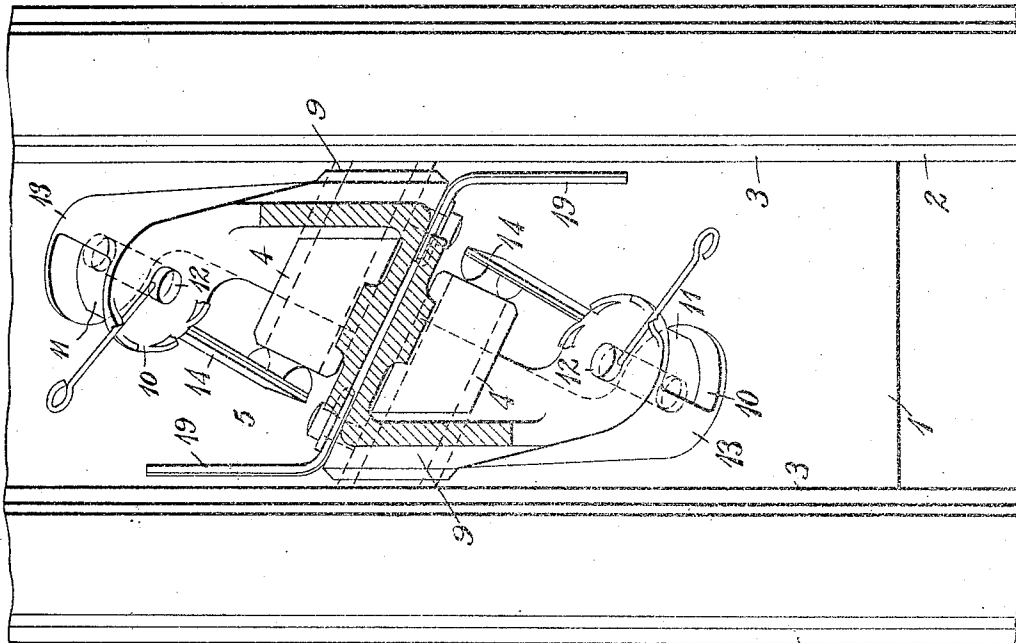


Fig. 2.

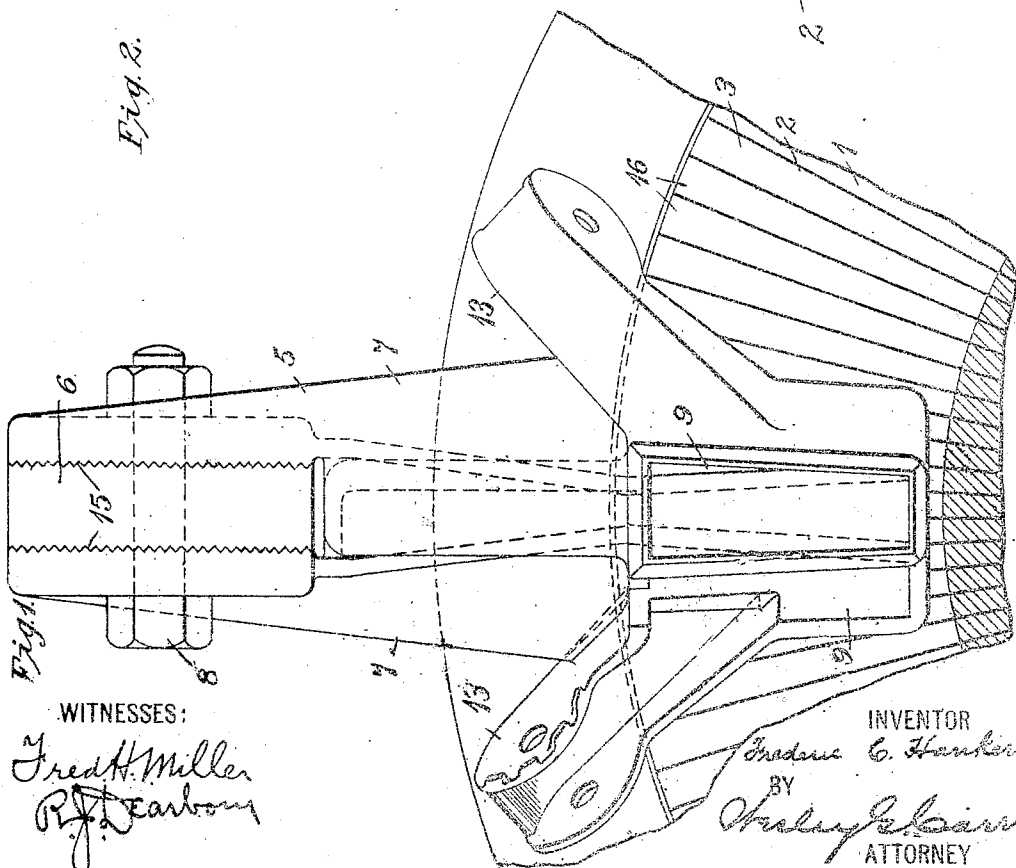


Fig. 1.

WITNESSES:

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Fred C. Hanker

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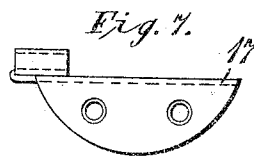
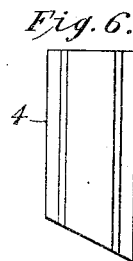
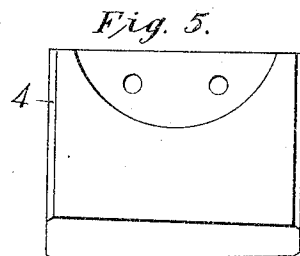
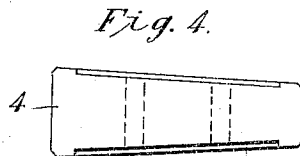
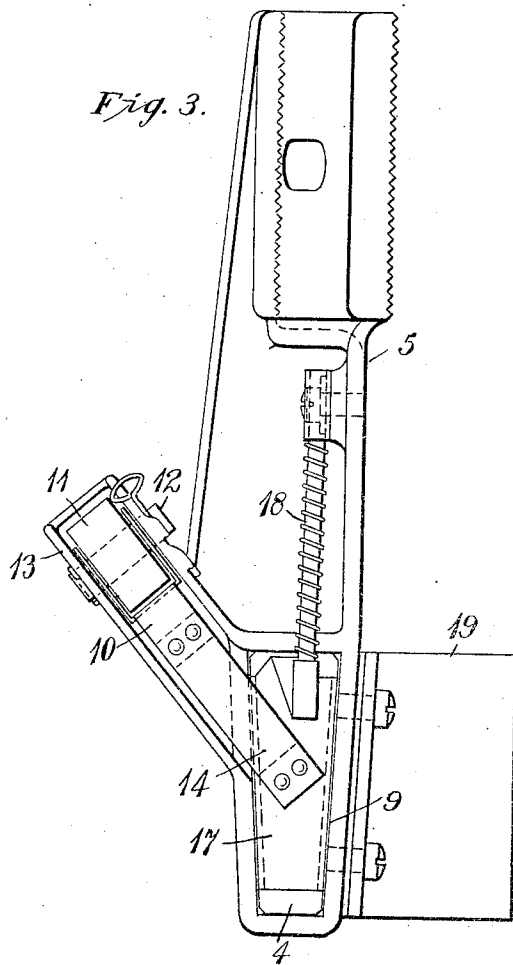
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

FREDERIC C. HANKER, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, OF EAST PITTSBURGH, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES.

1,007,562.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed October 7, 1908. Serial No. 456,638.

To all whom it may concern:

Be it known that I, FREDERIC C. HANKER, a citizen of the United States, and a resident of Wilkinsburg, in the county of Allegheny and State of Pennsylvania, have invented a 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 it has for its object to provide an improved device of this character which shall be specially adapted for use with dynamo electric machines having grooved commutators, the contact surfaces of which are perpendicular to the axis of the machine.

It has been found desirable, in some cases, to so construct the commutators of dynamo electric machines as to produce a plurality of grooves, the plane surfaces of which are adapted to be engaged by suitable contact brushes. The cylindrical surfaces at the bottoms of the grooves serve no useful purpose and, consequently, it is desirable to make the grooves as narrow as possible without conflicting with the contact brushes and brush holders, which are necessarily located in them.

According to my present invention, I provide an improved brush holder, which may readily be inserted in a relatively narrow groove and which, at the same time, is capable of receiving carbon blocks or brushes of the usual size.

My invention is illustrated in the accompanying drawings in which—

Figure 1 is an elevation of a portion of a commutator equipped with my improved brush holder, Fig. 2 is a plan view, partially in section, of the matter shown in Fig. 1, and Fig. 3 is an elevation of the brush holder at right angles to the plane of the carbon brush. Figs. 4, 5, 6 and 7 are detail views of a carbon block or brush which is suitable for use in the brush holder illustrated in the other figures.

Referring to the drawings, the matter illustrated comprises a commutator 1 having a plurality of annular projections 2 which provide parallel plane contact surfaces 3. The surfaces 3 are engaged by carbon contact blocks or brushes 4, which are so adjustably supported by a suitable brush

holder 5 that they engage adjacent plane surfaces of the commutator in substantially the same radial plane.

The brush holder 5 comprises a longitudinal supporting bar 6, substantially radial arms 7, which are secured to the bar 6 by bolts 8, brush guides 9 and a pair of similar pressure mechanisms 10. The carbon blocks or brushes 4 are fitted loosely into the brush guides 9 and are forced in opposite directions against the contact surfaces of the commutator by means of the pressure mechanisms. In order that the brushes may engage portions of the commutating surfaces, which are directly opposite each other, without interfering with their independent adjustment, they are disposed in parallel planes which form suitable angles with the commutating surfaces, as shown in Fig. 2 of the drawing.

Each of the pressure mechanisms 10 comprises a spiral spring 11, a shaft 12, which is supported in the walls of a spring-holding box 13, and a pressure finger 14, the free end of which is forced into engagement with the outer end of the carbon block or brush by reason of the action of the spring 11. The specific pressure mechanism here shown may be replaced by any other suitable device for creating the desired pressure between the contact brush and the commutating surface, if desired.

The bar 6 is provided with toothed surfaces 15, which are engaged by corresponding surfaces on the arm 7, in order that the position of the brush holder proper relative to the supporting bar 6 may be adjusted by loosening the clamping bolts 8, while, at the same time, the brush holder is effectually prevented from rotating or slipping after it is once fixed in position.

Referring to Figs. 4, 5, 6 and 7 of the drawings, the carbon brush here illustrated varies in thickness from its inner to its outer edge in order that the edges of its contact faces may lie in radial lines and thus enable the brush to properly cooperate with the surface of the commutator, which is built up of wedged shaped bars or segments 16, the side surfaces of which lie in radial planes. The carbon brush is provided with a cap 17 of sheet copper or other conducting material which is riveted to the top of the brush and

is electrically connected to the brush holder arm by means of a flexible shunt 18.

In order to prevent damage to the pressure mechanisms from any flashing or arcing which may take place at the points of contact between the brushes and the commutator, I provide shields 19 which are secured to the brush holder and extend some distance in close proximity to the commutating surfaces to which they are parallel.

It is conceivable that structural modifications may be effected within the spirit and scope of my invention.

I claim as my invention:

1. A brush holder for dynamo electric machines having a pair of side-by-side and oppositely disposed brush guides, the central planes of which are parallel to each other and inclined with reference to their ends.

2. The combination with a commutator member having plane contact surfaces, and a brush holder having a pair of brush guides, the central planes of which are parallel to each other and are inclined with reference to the adjacent commutators surfaces, of a pair of contact brushes mounted in said guides and means for forcing the brushes in opposite directions against said surfaces.

3. In a dynamo electric machine, the combination with a commutator having annular grooves in its surface and a stationary supporting rod or bar longitudinally disposed relative to the commutator, of a pair of brush holders adjustably secured to said rod or bar and projecting into one of said annular grooves and having a pair of brush guides, the central planes of said guides be-

ing parallel to each other and inclined with reference to the side walls of the grooves.

4. A brush holder for dynamo electric machines having plane disk commutating surfaces, comprising a pair of wedge shaped brush blocks and means for movably supporting said blocks with their central planes parallel to each other and inclined with reference to the commutating surfaces.

5. A brush holder for dynamo electric machines having a plurality of parallel plane disk commutating surfaces, comprising a pair of wedge shaped brush blocks which are inclined with reference to said surfaces, and means for movably supporting the blocks with their central planes parallel and the edges of their contact surfaces radial.

6. The combination with a rotatable commutator member having opposing plane contact surfaces, of a brush holder having parallel inclined brush guides adjacent to said surfaces, brushes located in said guides and means for forcing said brushes against said surfaces.

7. The combination with a rotatable commutator member having adjacent opposing plane contact surfaces, of a brush holder having parallel inclined guides, brushes mounted in said guides and having radial contact surfaces and means for holding said brushes in contact relation with the plane commutator surfaces.

In testimony whereof, I have hereunto subscribed my name this 3rd day of Oct., 1908.

FREDERIC C. HANKER.

Witnesses:

E. LIVINGSTONE,
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