

(No Model.)

G. VALLEY.

BRUSH HOLDER FOR DYNAMO ELECTRIC MACHINES AND MOTORS.

No. 536,973.

Patented Apr. 2, 1895.

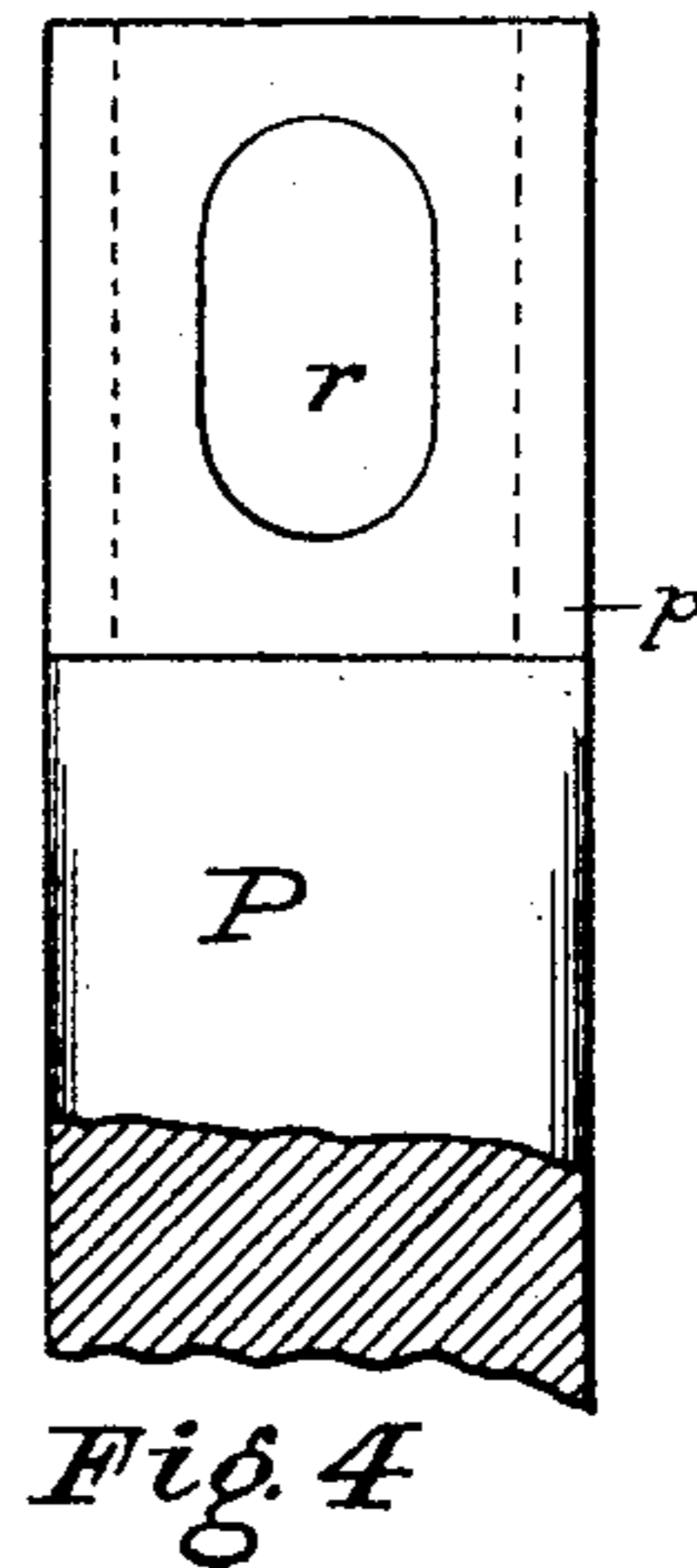
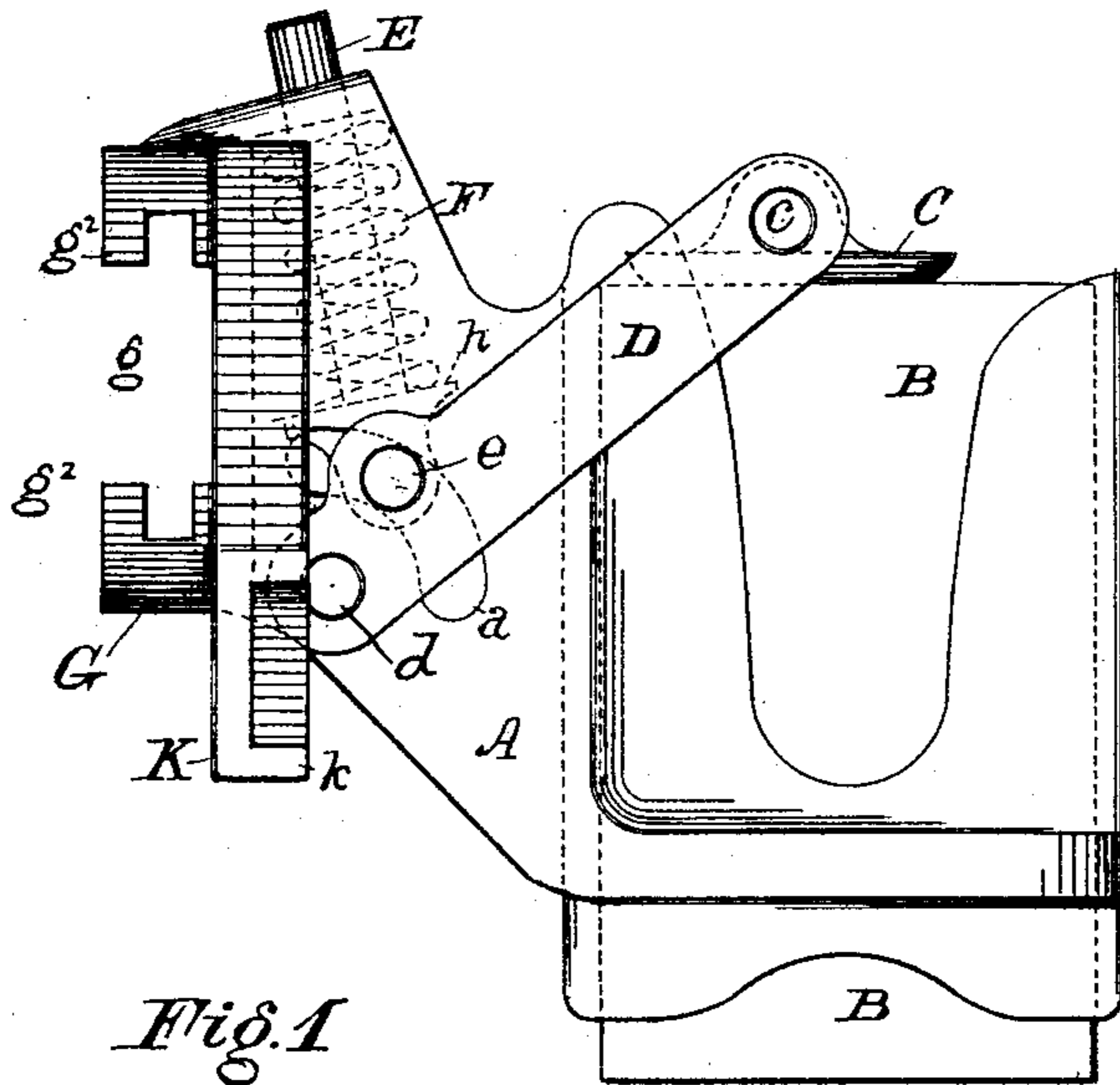


Fig. 3

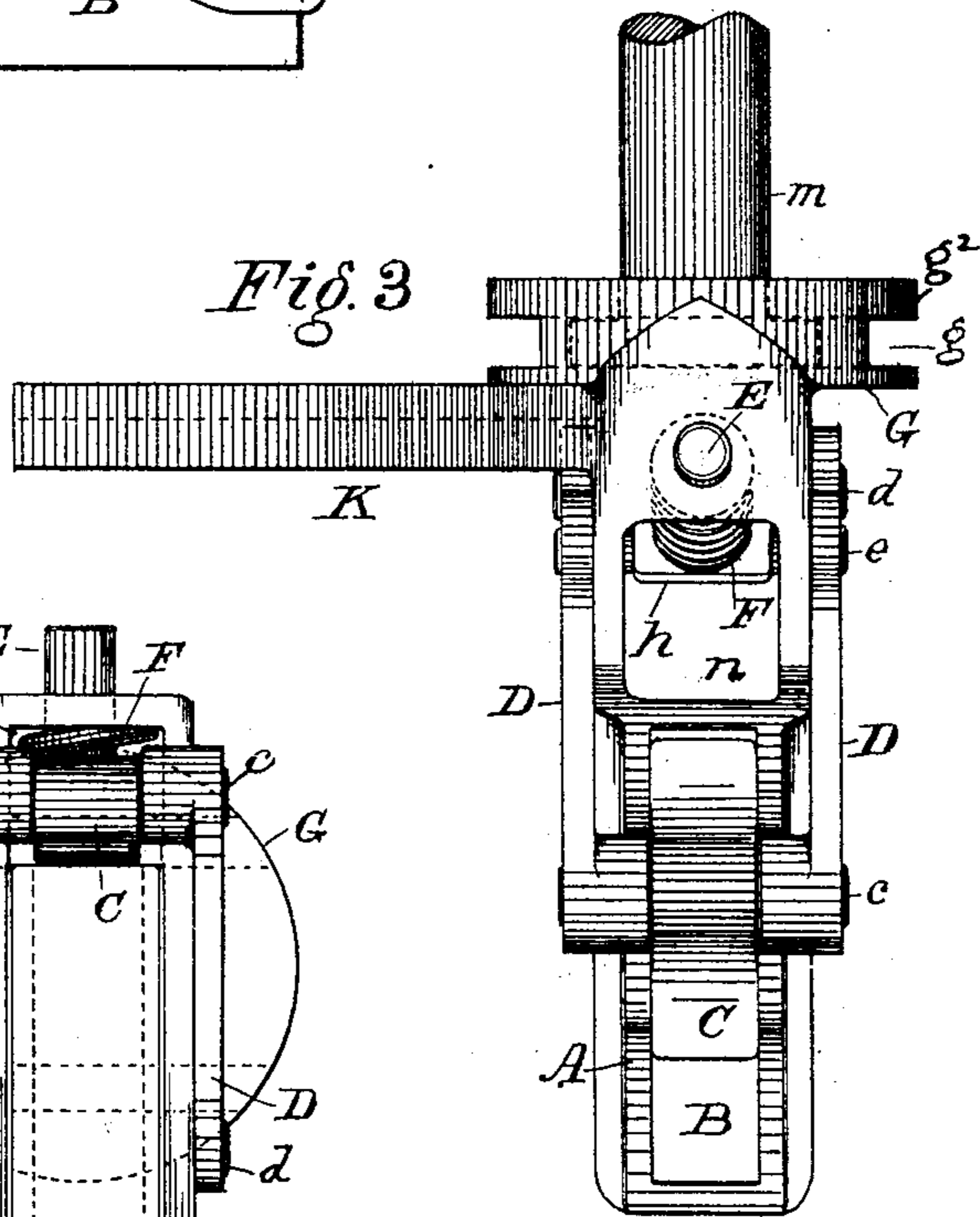
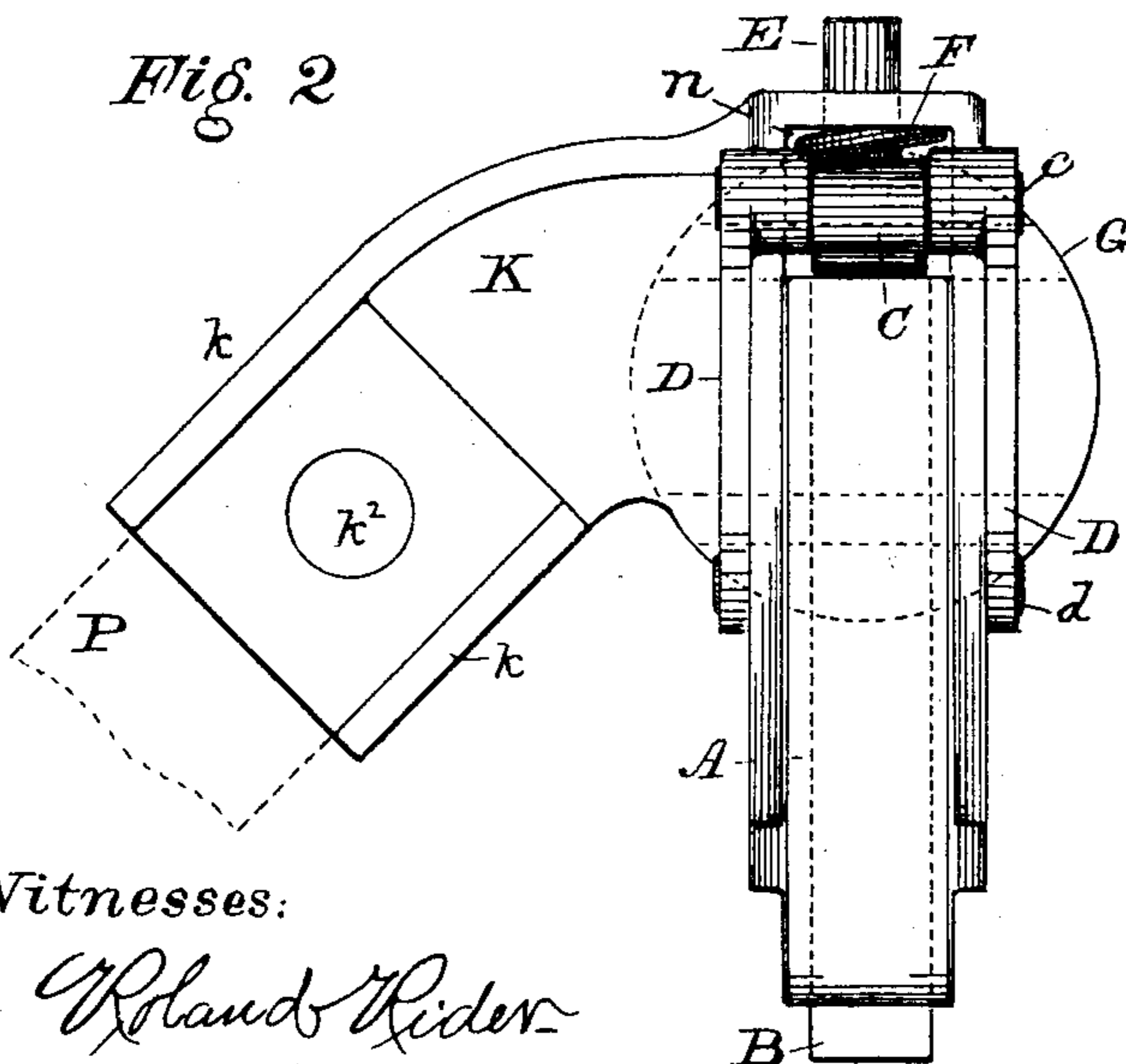


Fig. 2



Witnesses:

Roland Rider
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Inventor:

Gustaf Valley
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UNITED STATES PATENT OFFICE.

GUSTAF VALLEY, OF CLEVELAND, OHIO, ASSIGNOR TO THE STEEL MOTOR COMPANY.

BRUSH-HOLDER FOR DYNAMO-ELECTRIC MACHINES AND MOTORS.

SPECIFICATION forming part of Letters Patent No. 536,973, dated April 2, 1895.

Application filed December 15, 1894. Serial No. 531,903. (No model.)

To all whom it may concern:

Be it known that I, GUSTAF VALLEY, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Brush-Holders for Electric Motors, &c.; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the brush holder of dynamo electric machines and motors.

The object of the invention is to improve the construction and efficiency of the holder, and to increase the efficiency and lengthen the life of the carbon brush; and it consists in the construction, combination and arrangement of parts to effect such objects, as hereinafter fully described and pointed out in the claims.

In the drawings, Figure 1 is a side view in elevation of a brush-holder constructed according to my invention. Fig. 2 is an end elevation of the same; and Fig. 3 is a top plan view of the same. Fig. 4 is a detail of one end of the yoke connecting the two brushes.

Heretofore, as is well known, great difficulty has been experienced in securing and maintaining good contact of the brush with the commutator, and in avoiding the heating and sparking at the brush which are certain to occur if the most perfect contact is not maintained, and whose injurious effects are too well understood to need enumeration. By my improvement I am enabled to greatly increase the length of the brush, which of itself reduces the liability of the brush to become hot, and at the same time prolongs its life at least seven-fold, and I secure a constant and full contact between the brush and commutator, which by the decrease of the resistance still further avoids the heating of the brush and other parts, and the consequent injury to the commutator and other parts of the machine and motor.

In the drawings, A represents the body of the holder, constructed of suitable conducting material, cored out or recessed to receive

the brush B, and having one or both sides slotted or recessed, as shown in Fig. 1, to permit the passage of the shoe or follower C or its pivot *c* as the brush wears away in use. Attached to the frame or body A is a plate or boss G having the undercut slot *g*, whose lips *g*² engage the head of the bolt *m* by which the holder is attached to the motor frame or other suitable part. This allows the holder to slide laterally on the bolt-head and to be adjusted thereon as required.

The follower C which presses upon the top of the brush, is pivoted by a pivot *c* to an arm or arms D which, at the opposite end, are pivoted by a pivot *d* to the body of the holder A. Intermediate of the pivots *c* and *d* the arms D carry a pivot *e* which passes through the slot *a* in the holder body and supports a guide pin E, seated in a recess *n* within the body of the holder and extending through an opening in the top thereof. Around the pin E is a stout spring F the upper end of which bears against the top of the recess *n* and its lower end against the shoulder *h* on the pin E, whereby the pressure of the spring is transmitted by means of pivot *e*, arms D and follower C, to the brush B.

From the side of the holder projects a wing-piece K to which or to the body A, the conducting wire may be connected by a suitable binding-post or in any usual or preferred way. This wing-piece is recessed on one side, as seen in Fig. 1, having marginal ribs *k* *k* between which is received one end of a yoke P of insulating material which joins the two brush-holders.

The yoke P, one end of which is shown in Fig. 4, consists of a bar of wood or other non-conducting material, on each end of which is fitted a metallic cap *p*, and through both cap and bar is an elongated opening *r*, through which and the bolt-hole *k*² in the wing-piece is passed a bolt, whereby the two brush-holders are firmly secured to the opposite ends of the yoke, and are held rigidly in place, so that they cannot possibly be turned on their supporting bolt by the friction of the brush on the commutator, as otherwise is liable to occur.

As the commutator wears away with use, the brush-holders require to be set a little

nearer together, and this the elongated slot or opening *r* permits, while the firm seating of the cap *p* between the ribs *k k*, in which space it exactly fits, as shown in Fig. 2 maintains always the two brushes in exact relation to each other and to the segments of the commutator.

By the above described construction, as will be seen, I obtain not only a greatly increased length of brush, but an equally extended surface of contact between the brush and its holder, as a result of which the brush remains cool, it outwears all other forms of brush, it cannot have any lateral play in its holder, it maintains in wearing down a perfect contact, and it can be removed and replaced more quickly than with any other construction. By the rigid connection of the brushes I prevent the lead being changed, and also avoid the sparking which would be certain to occur in such a case if the motor or dynamo should be reversed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A brush-holder for dynamo electric machines and motors comprising in combination the recessed body and brush sliding therein, a brush-feeding arm pivoted to the holder body and carrying a follower which bears against the brush, a guide-pin pivoted to the feeding arm and engaging an opening in the holder body, and a spring interposed between a rigid part of the holder body and a lug or shoulder on the guide-pin, substantially as described.
2. In a brush-holder for dynamo electric machines and motors; the combination with the recessed body and the brush sliding therein, of the arms pivoted to the body, the follower pivoted to the arms and bearing on the brush, the guide-pin pivoted to the arms and engaging an opening in the holder-body, and a spring interposed between a rigid part of the holder-body and a lug or shoulder on the guide-pin, substantially as described.
3. The combination with the brush holder recessed to receive the brush and having its sides slotted, of the arms pivoted on the outside of the holder and carrying between them the follower bearing on the brush, the guide-pin pivoted between the arms and engaging an opening in the holder-body and a coiled spring surrounding the guide-pin and interposed between the holder-body and a shoulder on the guide-pin, substantially as described.
4. The combination of the recessed brush-

holder A, having slots *a* and undercut slot *g*, the arms D pivoted on the outside of the holder and carrying between them the follower C, the shouldered guide-pin E pivoted between the arms and passing through the top of the holder, and the spring F surrounding the guide-pin and bearing on the shoulder thereof and against the top of the case, substantially as described.

5. The combination of the brush-holder having a spring-actuated brush-feeder and a recessed wing piece, an insulating yoke having slotted end fitting the recess of the wing-piece, and a bolt rigidly but adjustably securing the holder upon the yoke, substantially as described.

6. The combination of the brush-holder having a spring actuated brush-feeder, a recessed wing-piece extending from the holder body in a plane transverse to the axis of the commutator, an insulating yoke having slotted end fitting in the recess of the wing-piece, and a bolt rigidly but adjustably securing the holder upon the yoke, substantially as described.

7. The combination of the brush-holder having a slot for adjustment of the same transversely to the line of feed of the brush, a recessed wing-piece extending from the holder-body transverse to the axial line of the commutator, an insulating yoke having slotted end fitting in the recess of the wing-piece, and a bolt rigidly but adjustably securing the holder upon the yoke, substantially as described.

8. The combination of the brush-holder having a slot at right-angles to the line of feed of the brush, for securing the holder in place and adjusting the same in a plane transverse to the feed of the brush, a wing-piece extending from the holder in a plane transverse to the axis of the commutator and having a recess at an angle to the securing slot, an insulating yoke having a slotted end fitting in the recess of the wing piece, a bolt rigidly but adjustably securing the holder upon the yoke, whereby the holder is prevented from turning upon its securing bolt, and means substantially such as described for feeding the brush and maintaining the same in contact with the commutator.

In testimony whereof I hereto affix my signature in presence of two witnesses.

GUSTAF VALLEY.

Witnesses:

C. ROLAND RIDER,
WM. G. TAYLOR.