

No. 670,119.

Patented Mar. 19, 1901.

J. TRIER.

BRUSH HOLDER FOR ELECTRIC MACHINES.

(Application filed Apr. 26, 1900.)

(No Model.)

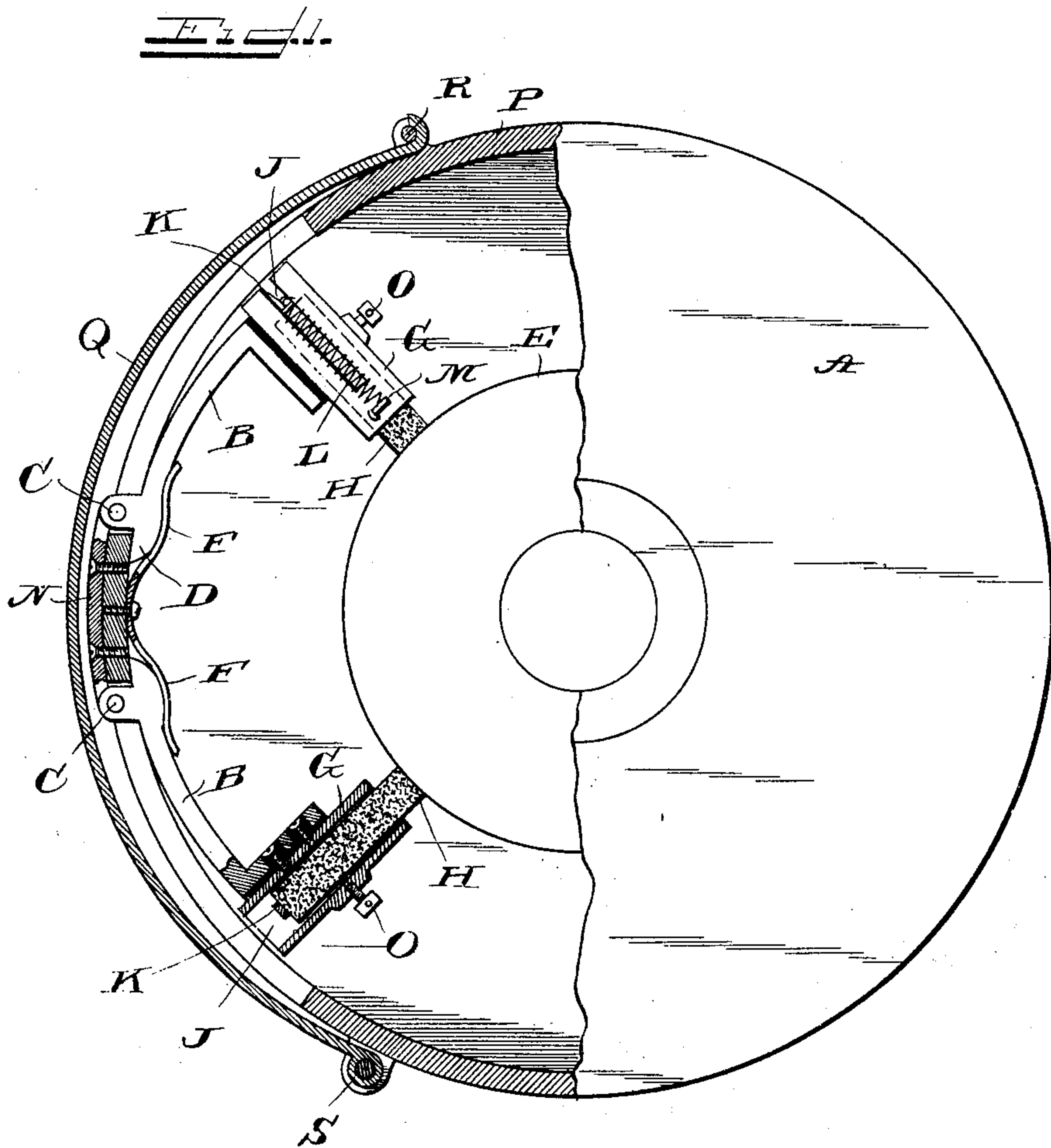
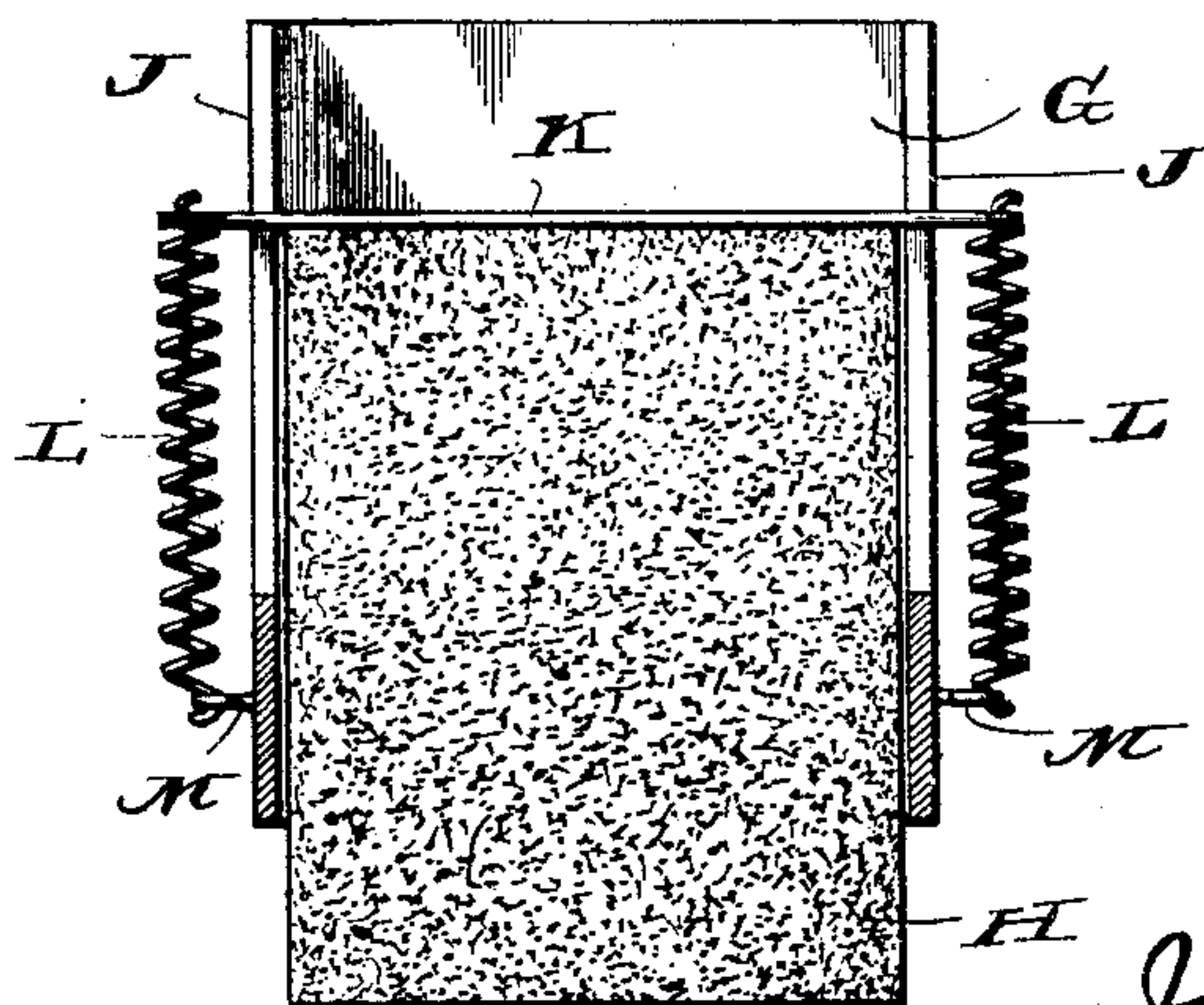


Fig. 1.



WITNESSES

H. S. Gaither
Robert Keir

INVENTOR

John Trier
By Brown & Darby
Attys

UNITED STATES PATENT OFFICE.

JOHN TRIER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
DONALD GRANT, OF FARIBAULT, MINNESOTA.

BRUSH-HOLDER FOR ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 670,119, dated March 19, 1901.

Application filed April 26, 1900. Serial No. 14,394. (No model.)

To all whom it may concern:

Be it known that I, JOHN TRIER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have
5 invented a new and useful Brush-Holder for Electric Machines, of which the following is a specification.

This invention relates to brush-holders for electric machines.

10 One object of the invention is to simplify and improve the construction of brush-holders and to render the same efficient in operation.

15 A further object is to provide a construction wherein inspection of the brushes is rendered easy and the brushes may be readily and easily inserted or replaced in the holder.

20 The invention consists substantially in the construction, combination, location, and relative arrangement, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claims.

25 Referring to the accompanying drawings and to the various views and references appearing thereon, Figure 1 is a view in end elevation, partly in transverse section, of a motor, showing the inclosing casing therefor and the construction and arrangement of
30 brush-holder embodying the principles of my invention. Fig. 2 is a detached detail sectional view showing the manner of mounting the brush in the holder.

35 The same part is designated by the same reference-sign.

In the drawings reference-sign A designates the motor, which may be of any well-known type or construction.

40 B is a casting, which I will herein designate as the "brush-holder lever." This lever is pivotally mounted, as at C, to a convenient part of the stationary frame and is provided with a shoulder or heel piece (shown at D) arranged to project beyond the point of
45 pivotal support of said lever B and to engage a fixed part of the adjacent frame, thereby limiting the rocking movement of the lever B toward the commutator E of the motor. Suitably secured to the frame is a spring F,
50 arranged to engage underneath the lever B and to yieldingly resist the rocking move-

ment of said lever in a direction away from the armature and to hold the heel or shoulder D in engagement with the frame, as clearly shown in Fig. 1. At the outer or free end of
55 the lever B, but insulated therefrom, is a chamber G, in which is received one or more brushes H. The chamber G comprises a casting having longitudinal slots J in the ends thereof, in which slots are received the ends
60 of a strip or bar K. Springs L are attached to each end of bar or strip K, the other ends of said springs being attached to suitable lugs M, cast or otherwise joined on or secured to the chamber-casting G. The bar
65 or strip K is designed to rest upon or engage the outer ends of the carbons or other forms of brushes H, and by the construction above set forth the springs L serve to constantly
70 press or feed the brushes longitudinally toward the surface of the commutator, thereby maintaining efficient contact of the brushes with the commutator-surface as the brushes wear away, while at the same time the cham-
75 ber-casting G or the end of the lever B is prevented from approaching too close to the commutator-surface by the engagement of the heel or shoulder D with a fixed part of the framework.

By hinging or pivoting the lever B, as at
80 C, as above described, the lever B may be readily rocked in a direction to carry the brush-holding chamber G away from the commutator-surface, thereby enabling the carbons to be readily and easily inserted in or
85 removed from the chamber G, the spring F serving to hold the lever B in elevated position when rocked about its pivots to raise the brushes. A convenient arrangement is shown for supporting two brush-holding levers,
90 wherein a casting or plate N is bolted or otherwise secured to the frame and one end of each of two levers B is hinged or pivoted to the respective ends of plate or casting N, as clearly shown in the drawings. The cham-
95 ber-casting G is provided with a lug or projection (indicated at O) to form a binding-post or other means of attachment of the conductor.

While a brush-holder embodying the prin-
100 ciples of construction above outlined is adapted for use generally in connection with elec-

tric machines, it is particularly well adapted and designed for use in connection with motors employed in automobiles or autotrucks, vehicles, or carriages, wherein the vibrations
 5 due to the jolts of the vehicle or carriage wheels rolling over rough places, car-tracks, stones, or the like are likely to be transmitted to the brush-holders, and thereby cause a too-rapid wear of the carbon or other brushes or
 10 causing the brush-holder to be brought into contact with the commutator-surface. In the construction above described this is impossible, as the lever B is prevented from unduly approaching the commutator-surface by the
 15 engagement of the heel or shoulder D with the framework, while the springs L operate to maintain the brushes in constant contact with the commutator-surface.

In the use of motors for automobiles or autotrucks, carriages, vehicles, or the like it is exceedingly desirable to protect the motor from dust, dirt, or the like. To this end it is the custom to inclose the entire motor within a protecting-casing. This protecting-casing is
 25 indicated at P. However, it is desirable to provide means whereby access may be had to the brush-holders for the purpose of inspection, repairs, or renewals. I therefore form openings in the motor-casing at the points
 30 where the brush-holders are located, and I provide a hinged section or cover (indicated at Q) for closing said openings. This section or cover is hinged along one end or edge at S, and a suitable clamp or other convenient
 35 form of lock R is provided for securing the opposite end or edge. In this manner the entire motor, including the brush-holders, is inclosed, while at any time the brush-holders may be inspected or the brushes renewed or
 40 removed by swinging back the hinged cover or section Q and then rocking or swinging the levers B outwardly, as will be readily understood. As shown, the plate or casting N is bolted or otherwise secured to the motor-casing
 45 at a point between the openings provided for adjacent brushes, so as to permit the ends thereof to project over said openings, as clearly shown.

It is obvious that as many brush-holders as
 50 desired may be employed in connection with the motor.

It is to be understood that many changes and variations in the details of construction and arrangement would readily occur to persons
 55 skilled in the art and still fall within the spirit and scope of my invention. I do not desire, therefore, to be limited or restricted to the exact details of construction shown; but,

Having now set forth the object and nature
 60 of my invention and a construction embodying the principles thereof, what I claim as

new and useful and of my own invention, and desire to secure by Letters Patent, is—

1. In a brush-holder, a lever pivotally mounted, a stop for limiting the movement
 65 of said lever toward the commutator, means for yieldingly resisting the movement of the lever in the other direction, a brush mounted in the free end of said lever and means for imposing a feeding pressure on said brush, as
 70 and for the purpose set forth.

2. In a brush-holder, a pivotally-mounted lever, a chamber carried in the free end of said lever, and adapted to receive the brush, said chamber having slots in the ends thereof,
 75 a strip or bar arranged to engage the end of the brush and having its ends arranged to be received in said slots, springs operating on said strip or bar to press the brush to its work and a stop for said lever, as and for the pur-
 80 pose set forth.

3. In a brush-holder, a pivotally-mounted lever, a chamber carried in the free end of said lever, and adapted to receive the brush, said chamber having slots in the ends thereof,
 85 a strip or bar arranged to engage the end of the brush and having its ends arranged to operate in said slots, lugs formed on the ends of said chamber, springs connected at one end to said lugs and at the other to said strip
 90 or bar and a stop for said lever, as and for the purpose set forth.

4. In a brush-holder, a pivotally-mounted lever, a chamber supported in the free end of said lever but insulated therefrom, and
 95 adapted to receive the brush, a stop for limiting the movement of said lever and means engaging said brush for constantly pressing the brush to its work, as and for the purpose set forth.
 100

5. The combination with a motor of an inclosing casing therefor, a brush-holder pivotally mounted on said casing, said casing having an opening adjacent to which said brush-holder is pivoted, and a hinged cover for said
 105 opening, as and for the purpose set forth.

6. The combination with a motor of an inclosing casing therefor, said casing provided with openings therein, a plate secured to said casing and having its ends projecting over
 110 said openings, brush-holding levers arranged in said openings and pivotally connected to the ends of said plates and a hinged cover for said openings, as and for the purpose set forth.

In witness whereof I have hereunto set my
 115 hand, this 10th day of March, 1900, in the presence of the subscribing witnesses.

JOHN TRIER.

Witnesses:

E. C. SEMPLE,
 S. E. DARBY.