No. 753,356. PATENTED MAR. 1, 1904.

C. O. BULOCK.

BRUSH HOLDER.

APPLICATION FILED AUG. 21, 1903.

NO MODEL.

Fig. 1.

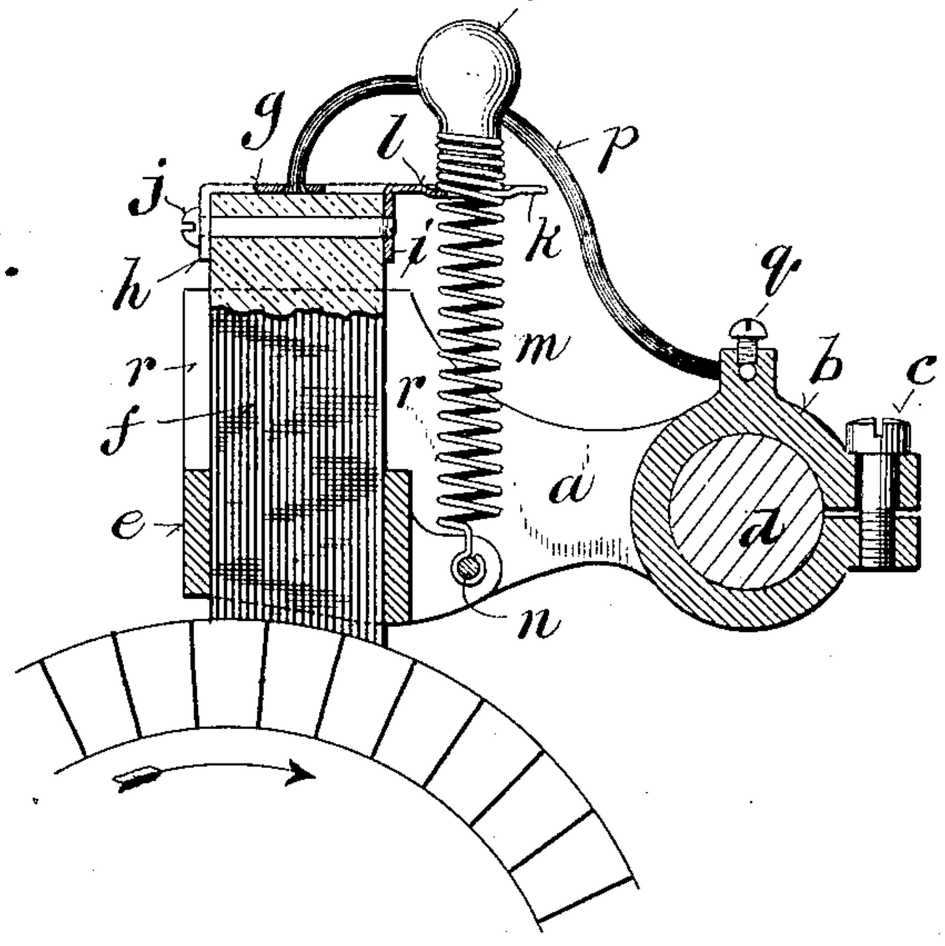


Fig. 4.

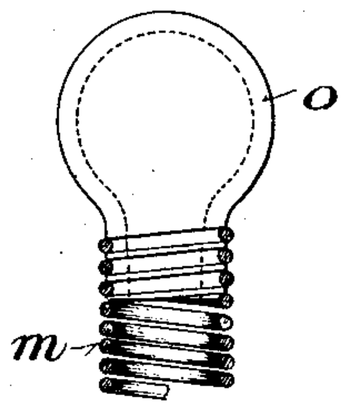


Fig. 2.

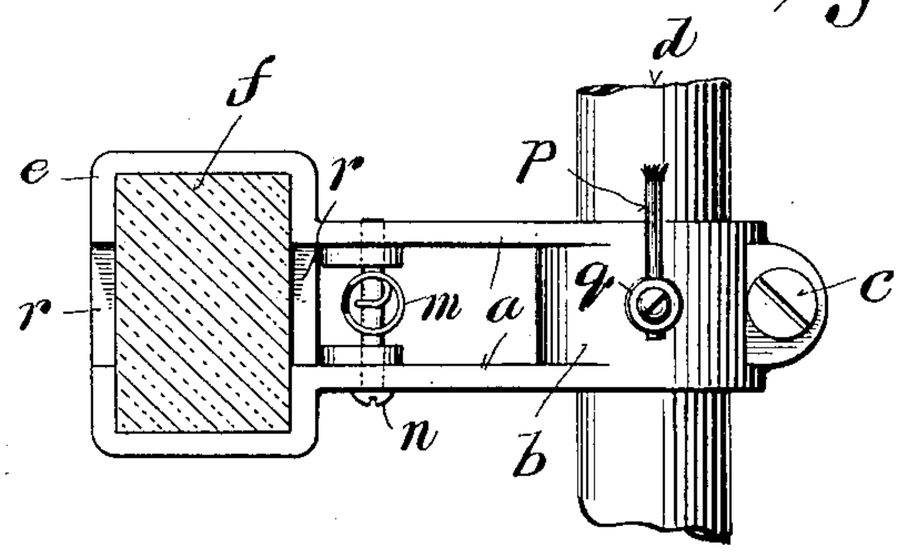
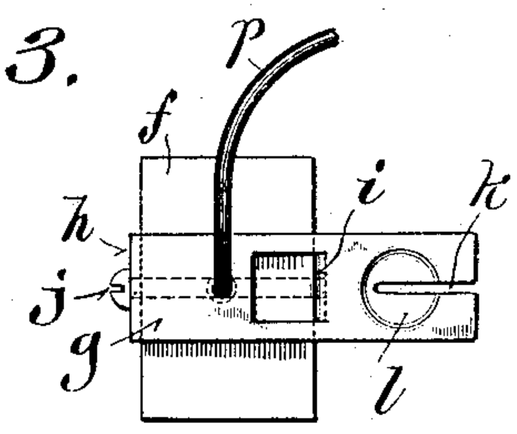


Fig. 3.



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UNITED STATES PATENT OFFICE.

CHARLES O. BULOCK, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO NATIONAL ELECTRIC COMPANY, OF MILWAUKEE, WISCONSIN, A CORPORATION OF WISCONSIN.

BRUSH-HOLDER.

SPECIFICATION forming part of Letters Patent No. 753,356, dated March 1, 1904.

Application filed August 21, 1903. Serial No. 170,320. (No model.)

To all whom it may concern:

Be it known that I, CHARLES O. BULOCK, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Brush-Holders, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

This invention relates to brush-holders for electric machines. Its main object is to simplify and improve the construction and operation of brush-holders of this class.

It consists in certain novel features of construction and in the peculiar arrangement and combinations of parts hereinafter particularly described and claimed.

In the accompanying drawings like letters designate the same parts in the several figures.

Figure 1 is a longitudinal section of a brush-holder embodying my invention. Fig. 2 is a plan view of the same, the outer end of the brush, with the plate for the attachment of the tension-spring, being removed. Fig. 3 is an end view of the brush with the attachment-plate for the tension-spring applied thereto, and Fig. 4 is an enlarged view of the knob or handle attached to the outer end of the spring.

The body of the holder consists of an open arm *a*, formed at one end with a split collar *b*, which is provided with a clamping-screw *c* for adjustably securing the holder on a stud *d* in the usual or any suitable manner. The arm *a* is formed at the other end with a rectangular box or sleeve *e*, in which the carbon brush *f* is fitted and movable endwise. To the outer end of the brush a plate *g*, preferably made of sheet metal, is attached by two ears *h* and *i*, bent at right angles to the plate to embrace opposite sides of the brush and secured thereto by a screw *j*, passing through the brush and threaded in the ear *i*. The ear *i* may be conveniently punched from the plate, as shown. The plate extends beyond the ear *i* and is forked or formed through its projecting end, which overhangs the back side of the brush, with a slot *k* for the attachment of the tension-spring, as hereinafter explained. A boss or seat *l* is pressed into said plate at the inner end of the slot *k* to hold the tension-spring centrally in place when it is caught thereon, as shown in Fig. 1.

m is a spiral spring attached at one end between the sides of the arm *a* to a pin or screw *n*, which is made to be easily withdrawn for the purpose of removing and renewing the spring. At its outer end the spring is provided with a knob or handle *o*, which may be made of metal, fiber, or other suitable material and attached to the spring by a screw-threaded shank, as shown in Fig. 4. The spring is formed with normally close-wound turns or coils and is adapted to be caught at different points between adjoining coils on the forked projection of the plate *g*, the slot *k* in said plate being made of sufficient width to readily receive the wire of the spring. By grasping the knob or handle *o* the spring can be readily withdrawn sidewise from engagement with the plate *g*, stretched to exert the desired tension on the brush, and reëngaged at any desired point between adjoining spirals with said plate.

A flexible conductor or wire *p* is attached at one end to the plate *g* and detachably secured at the other end by a binding-screw *q* to the collar *b*.

The attachment of the inner end of the tension-spring to the brush-holder at a point behind and near the lower end of the sleeve *e* and at or near its other end to the overhanging plate *g* at the outer end of the brush tends to tip the brush backward at its outer end, thereby counteracting the tendency of the commutator, rotated in the direction indicated by the arrow on Fig. 1, to tip it in the opposite direction. The brush is thus prevented from binding and made to work freely in the sleeve *e*, thereby insuring constant and uniform contact between its entire working face and the commutator.

The sleeve *e* is formed with slots *r*, opening through its upper end on the front and back sides to permit the downward passage of the ears *h* and *i* on the plate *g* as the brush is worn away.

Various changes in the minor details of construction and arrangement of parts may be made within the spirit and intended scope of the invention.

I claim—

1. In a brush-holder the combination of a sleeve, a brush movable endwise therein and provided at its outer end with an overhanging slotted plate, and a spiral spring attached at one end to a part of the holder and adapted to be engaged with said plate between different turns of the spiral to vary the tension on the brush, substantially as described.

2. In a brush-holder the combination of a sleeve, a brush movable endwise therein and provided at its outer end with a projection overhanging the back side of the sleeve, and a tension-spring connecting said projection with a part of the holder on the back side of said sleeve, whereby the pull of the spring in connection with the action of the commutator prevents binding of the brush in the sleeve and insures constant and uniform contact of the brush with the commutator, substantially as described.

3. In a brush-holder the combination of a sleeve, a brush movable endwise therein and provided at its outer end with an overhanging slotted plate having a spring-seat cut by the slot and a spiral spring attached at one end to a part of the holder and adapted to be caught and held at different points by said plate, substantially as described.

4. In a brush-holder the combination of a sleeve, a brush movable endwise therein, a metal plate formed with ears which embrace and are secured to the outer end of the brush, and with a forked projection overhanging one side of the brush, and a spiral spring attached at one end to a part of the holder and adapted to be caught and held at different points between adjoining coils by said projection, substantially as described.

5. In a brush-holder the combination of a sleeve having longitudinal slots opening through its outer end on opposite sides thereof, a brush movable endwise therein and provided at the outer end with a plate having a forked projection which overhangs one side of the brush and ears attached to opposite sides of the brush in position to enter the slots in said sleeve, and a spiral spring attached at one end to a part of the holder and adapted to be caught and held at different points between adjoining coils on said projection, substantially as described.

6. In a brush-holder the combination of a sleeve, a brush fitting and movable endwise therein and provided at its outer end with an overhanging forked or slotted projection, and a tension-spring provided at its outer end with a knob or handle attached at its inner end to a part of the holder and adapted to be caught and held at different points between consecutive coils or turns upon said projection, substantially as described.

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

CHARLES O. BULOCK.

Witnesses:

JOHN H. HURLEY,

ALICE E. GOSS.