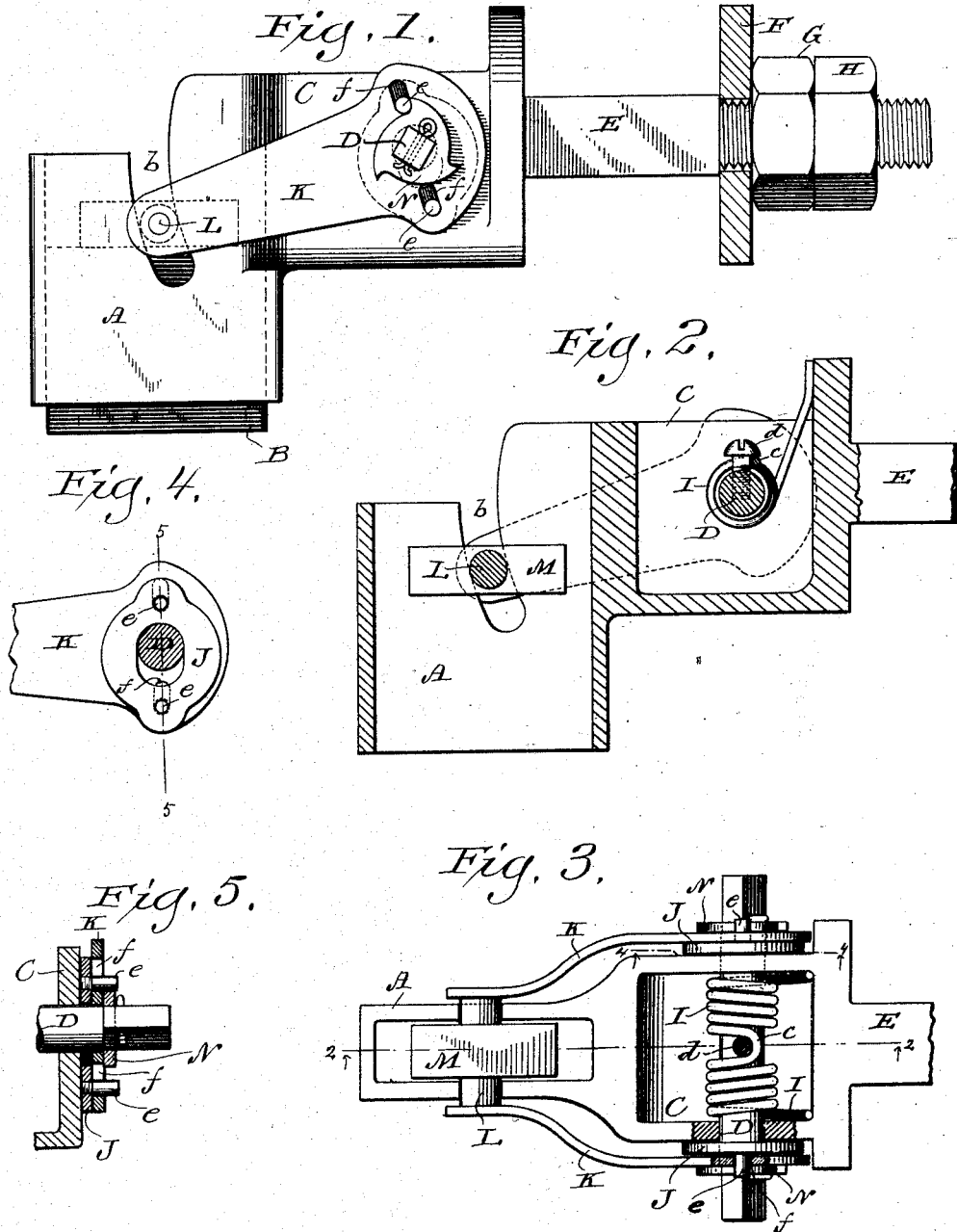


(No Model.)

C. F. GOODRICH.  
COMMUTATOR BRUSH HOLDER.

No. 489,185.

Patented Jan. 3, 1893.



Witnesses  
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# UNITED STATES PATENT OFFICE.

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## COMMUTATOR-BRUSH HOLDER.

SPECIFICATION forming part of Letters Patent No. 489,185, dated January 3, 1893.

Application filed December 29, 1891. Serial No. 416,495. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES F. GOODRICH, a citizen of the United States, and a resident of Chicago, in the county of Cook, and in the State of Illinois, have invented certain new and useful Improvements in Commutator-Brush Holders; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention has for its object to provide a commutator-brush-holder in which a spring-controlled pressure mechanism may be regulated as to tension, without detaching the brush holder from the machine of which it forms a part, and to this end, the said invention consists in certain peculiarities of construction and arrangement of parts to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings:—Figure 1. represents a side elevation of a commutator brush-holder constructed according to my invention, a face-plate or washer forming part of its attaching mechanism being shown in section, Fig. 2. a vertical longitudinal section of the same taken on line 2—2 of the succeeding figure, Fig. 3. a plan view of the brush-holder, the shank of the same being shown as broken away, Fig. 4. a detail elevation partly in section on line 4—4 of the preceding figure, and Fig. 5. a detail transverse section taken on line 5—5 of Fig. 4, a spring-arbor illustrated by this view being in elevation.

Referring by letter to the drawings, A represents a guide having the general contour of a commutator brush B that is loosely arranged therein, and this guide is provided with vertically disposed side slots *b* that are preferably of segmental form.

Extending rearward from the upper end of the guide A is a housing C provided with bearings for a transverse arbor D that is squared or otherwise shaped at its ends to take a key or wrench. The guide A and housing C are shown as cast in one piece with a squared shank E for engagement with a suitable support, a face-plate or washer F, and jam-nuts G H being arranged on the screw-threaded rear end of the shank to serve as a means for holding the same in rigid engagement with said support.

Surrounding the arbor D, within the housing C is a spiral spring I, the coils of the latter being wound in opposite directions from a central yoke *c* that bears against a stop *d* on said arbor, this stop being shown in the form of a screw, and the ends of the spring have their bearing against the rear wall of said housing. Arranged on the arbor D, outside of the housing, are slotted plates J, and each of these plates is provided with two lateral studs *e* diametrically opposite to each other. Slipped onto the arbor D, against the plates J, are the rear ends of links K, and these links are provided with slots *f* for the engagement with the studs *e* on said plates. The forward ends of the links are connected by a transverse pin L, that engages the slots *b* in the sides of the guide A, and loose on this pin is a block M that impinges against the outer end of the commutator brush above described. Fast on the arbor D, outside of the links K, are ratchet-plates N, and while I have shown each of these plates as provided with only three risers, they may have an indefinite number of the same. The tension of the spring is regulated by turning the arbor D in the proper direction, and this tension is maintained by the engagement of each of the ratchet plates N with a lateral stud *e* on the relative one of the slotted plates J above described. The power of the spring I, acting through the medium of the arbor D, links K, pin L and block M, is exerted on the brush B, and thus the latter is always held down against the commutator, the slots *b* in the guide A permitting the necessary movement of the spring-controlled mechanism to compensate for wear on said brush. Should the spring I weaken or it be necessary from any cause to increase, or diminish, its tension the arbor D is turned in the proper direction by means of a key, wrench, or other suitable implement, to accomplish this result. The links K being slotted for engagement with the studs *e* on the slotted plates J, the latter will automatically adjust themselves to permit those of their lugs in engagement with the ratchet-plates N to automatically disengage and re-engage when the arbor D is turned to tighten the spring I, but if said arbor be turned to loosen said spring, the disengage-

ment of said studs and ratchet-plates, necessary to permit this latter turn, can be readily effected by the operator.

5 Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:—

10 1. A commutator-brush-holder comprising a slotted guide for the brush, a pin arranged to engage the slots in the brush-guide, a block on the pin in opposition to said brush, a housing extended from said brush-guide, an arbor having its bearings in the housing, links connecting the arbor and block-supporting pin, a spiral tension spring wound on the arbor  
15 and made fast thereto, and a ratchet-mechanism controlling the wind of the spring, substantially as described.

20 2. A commutator-brush-holder comprising a guide for the brush, a housing extending from the brush-guide, an arbor having its bearings in the housing, a spiral tension-spring wound on the arbor and made fast thereto, slotted plates arranged on the arbor

outside of the housing and provided with lateral studs, links loose on said arbor and provided with slots for engagement with the plate-studs, ratchets fast on the aforesaid arbor for engagement with certain of said plate-studs, and a pressure-block supported by the links in opposition to said brush, substantially as described. 25 30

3. A commutator-brush-holder comprising a guide for the brush cast in one piece with a housing and attaching shank, a spring-controlled pressure-mechanism in opposition to the brush, and suitable means for regulating the tension of said pressure-mechanism, substantially as described. 35

In testimony that I claim the foregoing I have hereunto set my hand, at Chicago, in the county of Cook and State of Illinois, in the presence of two witnesses. 40

CHARLES F. GOODRICH.

Witnesses:

H. R. LEYDEN,  
F. A. BRYAN.