

No. 746,450.

PATENTED DEC. 8, 1903.

H. K. BROOKS.
BRUSH HOLDER.

APPLICATION FILED FEB. 24, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

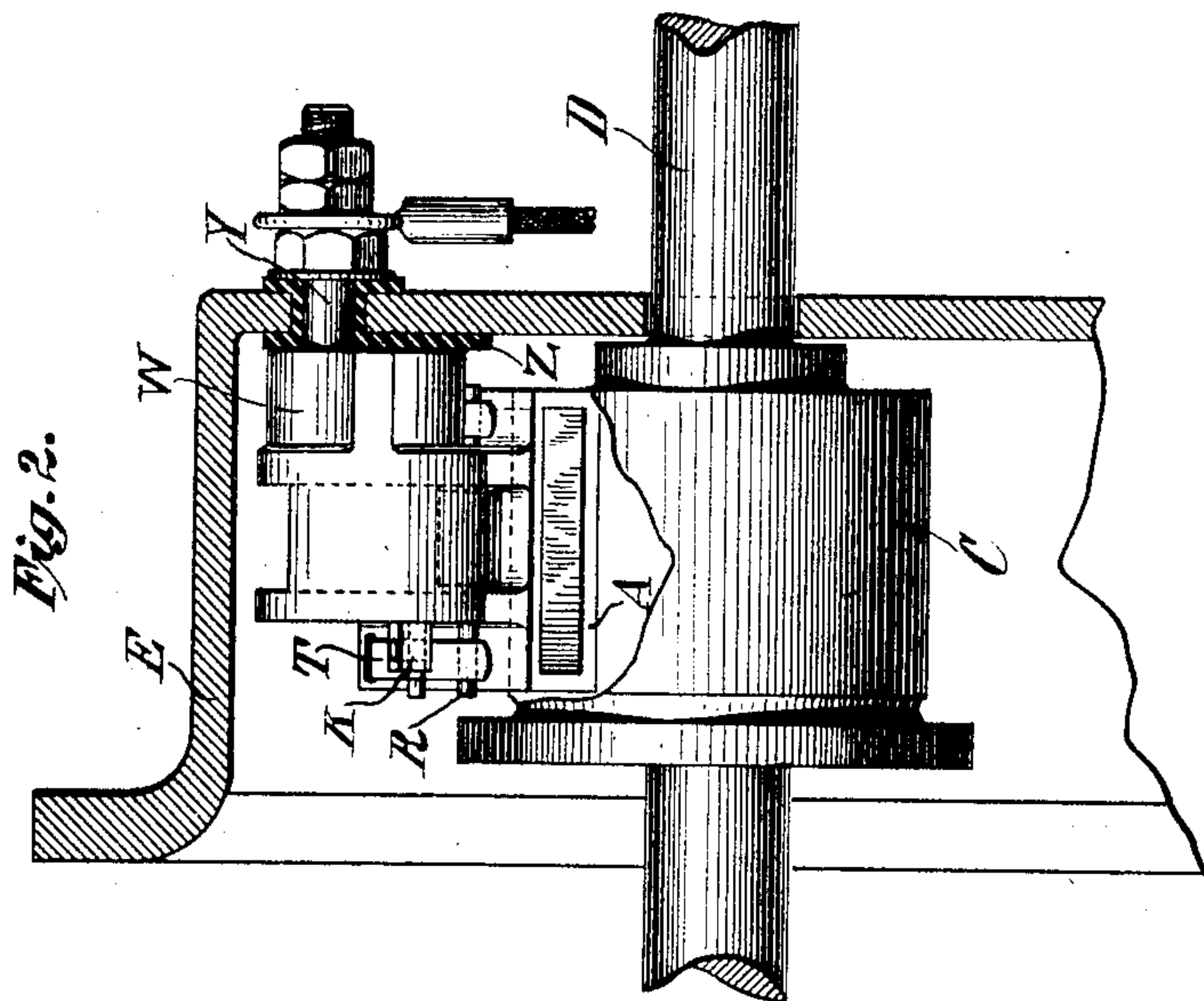
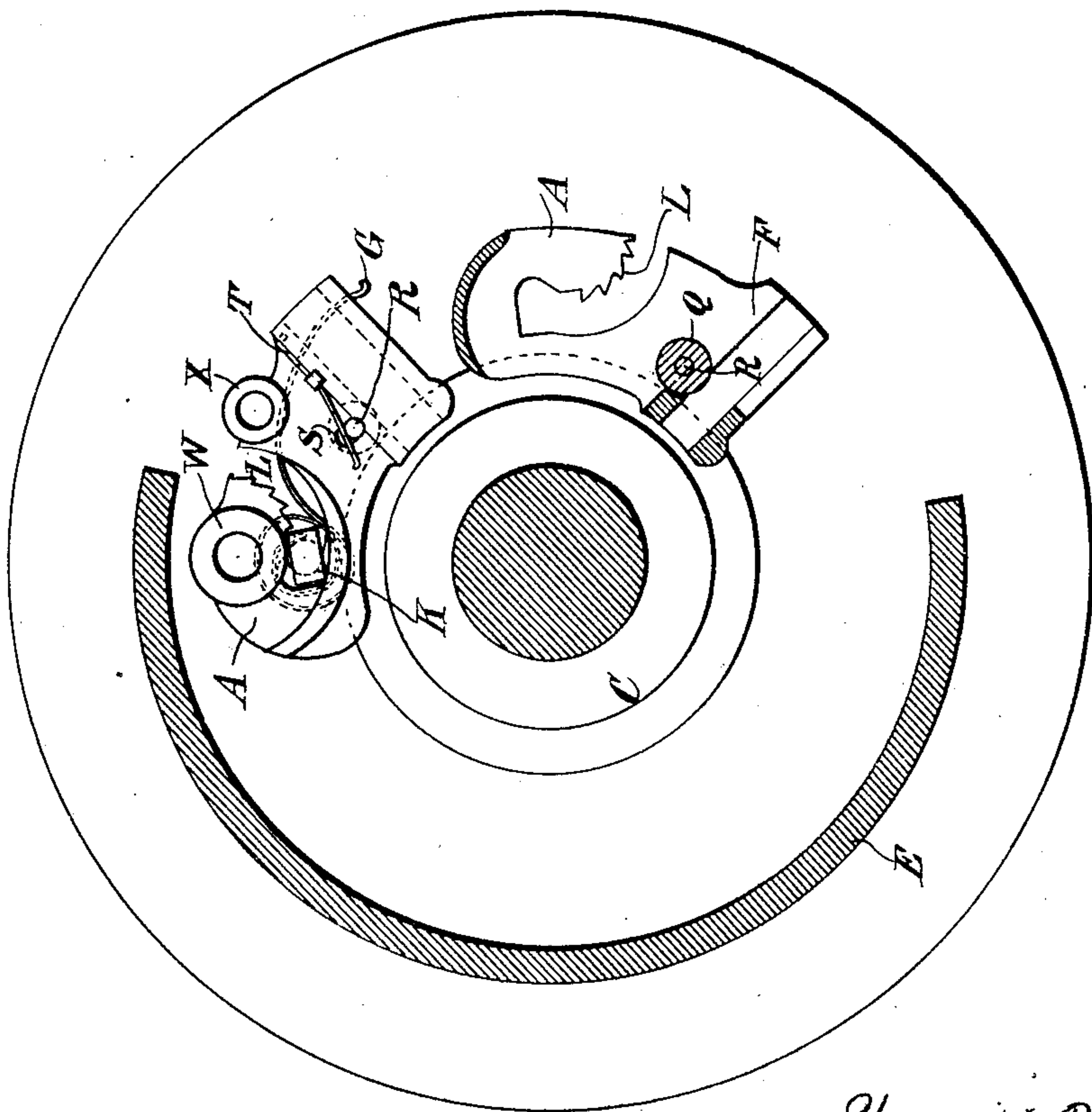


Fig. 1.



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A. L. O'Brien

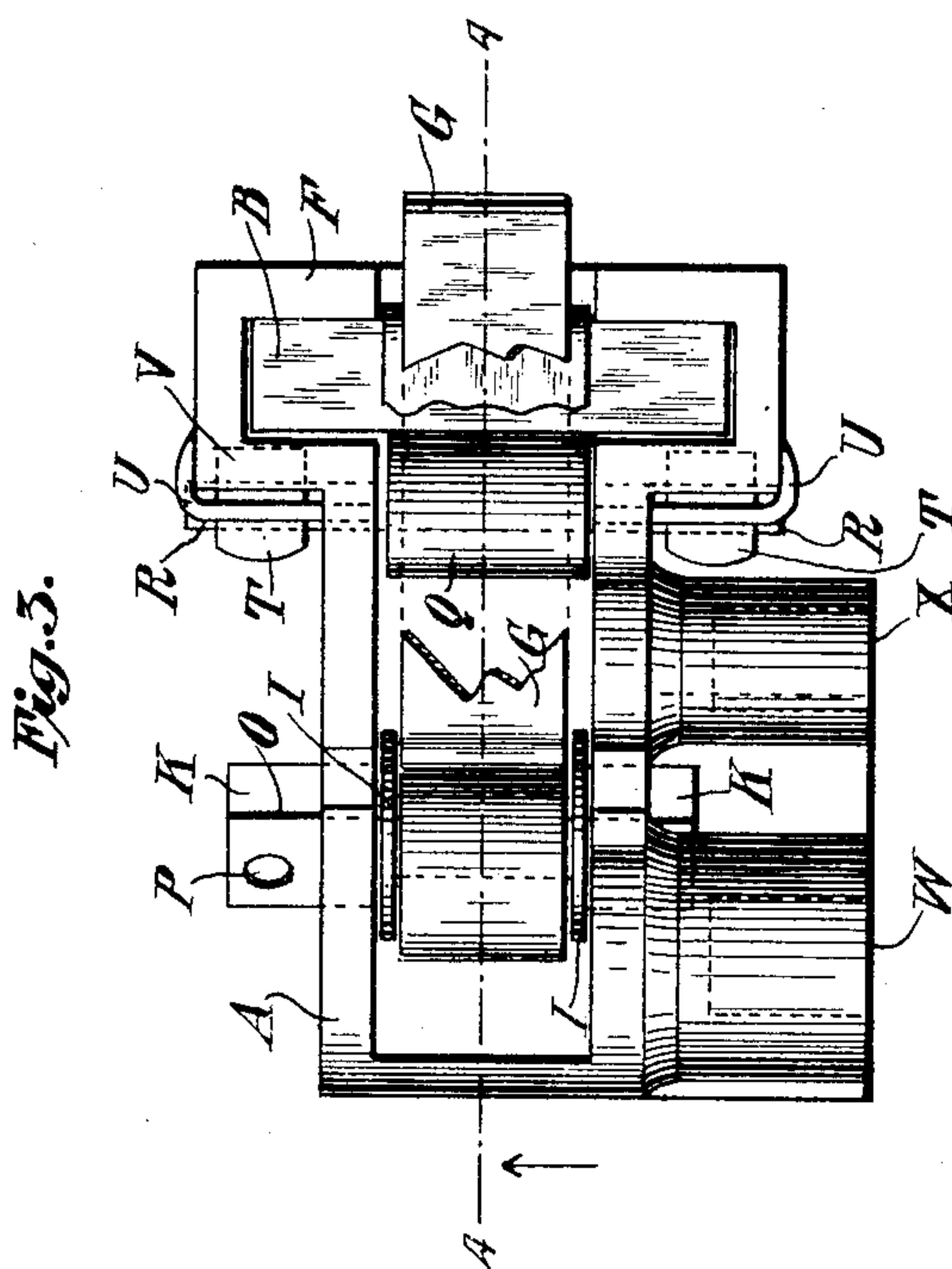
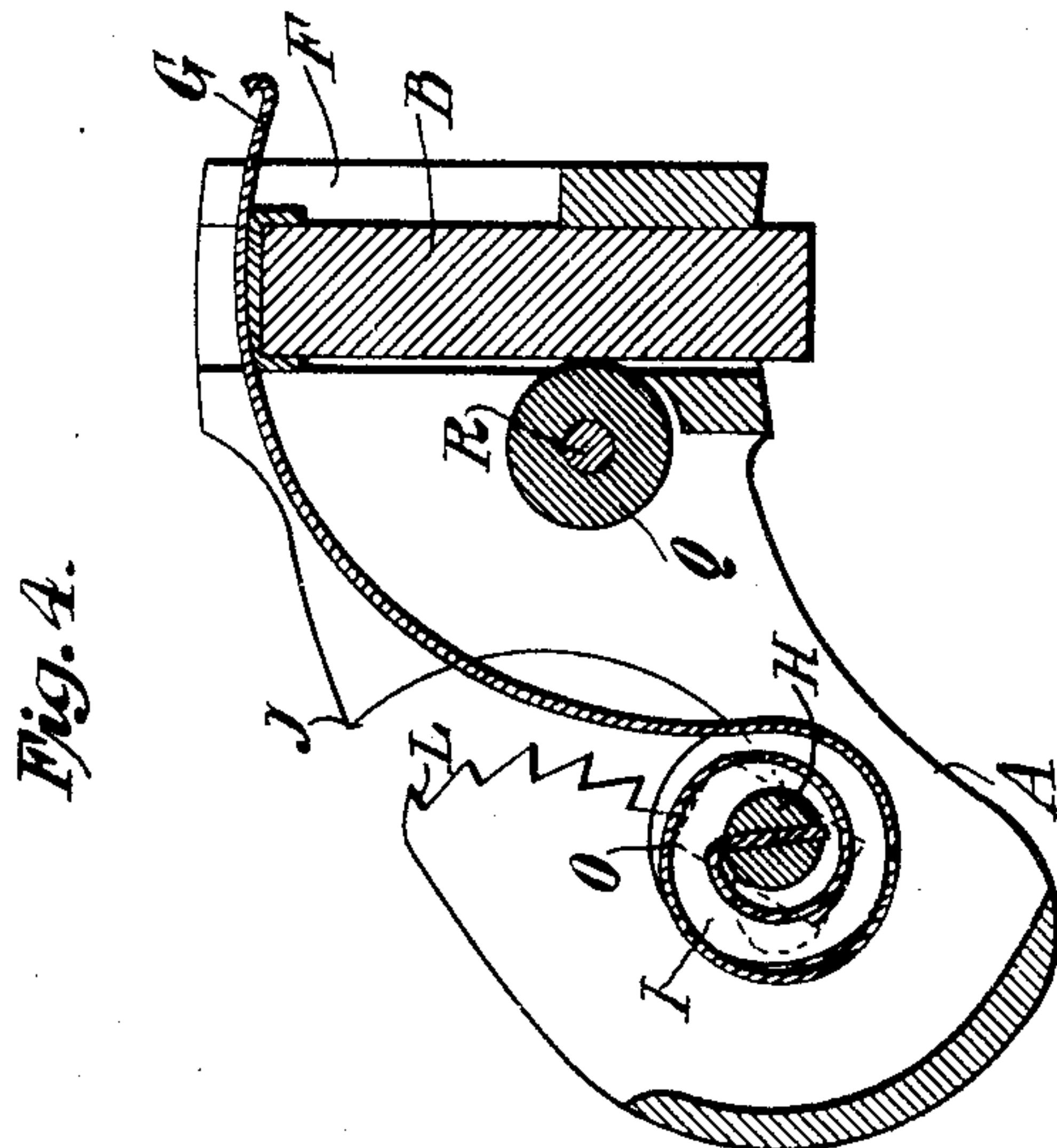
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HENRY K. BROOKS, OF NEW YORK, N. Y., ASSIGNOR TO UNITED STATES
LIGHT & HEATING COMPANY, OF NEW JERSEY.

BRUSH-HOLDER.

SPECIFICATION forming part of Letters Patent No. 746,450, dated December 8, 1903.

Application filed February 24, 1903. Serial No. 144,699. (No model.)

To all whom it may concern:

Be it known that I, HENRY K. BROOKS, a citizen of the United States, and a resident of the borough of Manhattan, city, county, and State of New York, have invented certain new and useful Improvements in Brush-Holders, of which the following is a specification accompanied by drawings.

This invention relates to brush-holders for electrical apparatus; and its objects are to improve upon the construction of such holders and enable a suitable spring for maintaining the brush or brushes in the holder to be automatically tightened as the spring is placed in position upon the brush and then securely locked in its tightened position in such manner that the spring will not be unlocked by jars or shocks, but may be readily unlocked by hand for removal or adjustment.

Another object of the invention is to enable the spring to be readily adjusted to different tensions without the use of adjusting-screws and numerous adjustable parts.

Further objects of the invention are to compensate for brushes of slightly-different dimensions and prevent chattering of the brushes, while at the same time maintaining a brush in a given position relatively to the commutator when the generator or motor is rotating in either direction, so that the face of the brush always bears evenly on the commutator and makes a uniform contact. According to this construction a firm and close contact is also obtained between the brushes and the brush-holder.

Further objects of the invention will hereinafter appear; and to these ends the invention consists of a brush-holder for carrying out the above objects embodying the features of construction, combinations of elements, and arrangement of parts having the general mode of operation substantially as hereinafter fully described and claimed in this specification and shown in the accompanying drawings, in which—

Figure 1 is an end view, partly in section, of a commutator provided with brush-holders embodying the invention. Fig. 2 is a side view of the commutator and brush-holders with the casing in section. Fig. 3 is a top plan view of one of the brush-holders. Fig. 4 is a longitudinal sectional view through one

of the brush-holders, Figs. 3 and 4 being each on an enlarged scale.

Referring to the drawings, A represents the frame of a holder, which may be of any suitable metal, and B represents a brush supported within the holder and adapted to bear upon the commutator C, provided upon the armature-shaft D within the casing E. But one brush B is shown in each holder, although it is to be understood that any desired number may be used, and the holders are provided with sockets F for the brushes. In this instance a suitable spring G is provided for pressing each brush against the commutator and for maintaining the brushes within the holder. According to this invention the spring is automatically tightened as it is placed in position. In this instance a flat spring G is shown, one end of which is adapted to bear upon the top of the brush, while the other end is suitably secured to a block H, as shown, provided with a slot into which the end of the spring is thrust. Several turns of the spring are taken around the block, and, as shown, guide-flanges I are provided upon the block at each side of the spring. The frame A is provided with curved slots or ways J at each side, into which the projecting squared ends K of the block H extend. According to this construction it will be seen that a slight rotation will be imparted to the block as it is thrust downwardly in the slots or ways J, thus tending to coil the spring more tightly around the block and at the same time cause the outer end of the spring to bear with greater pressure upon the top of the brush.

Suitable means are provided for maintaining the block in any desired position along the ways or slots J, in this instance the upper edges of the slots being provided with inwardly-projecting teeth L for holding the block in position. The tendency of the spring G to untwist will force the upper corners O of the block into engagement with the teeth L. According to the position of the block in the slots or ways J different degrees of tension will be obtained upon the spring. The block, which may be termed a "key," is thus securely maintained in the ways J and will not be jarred out of position by vibration and jars. An aperture P may be provided in one

end of the key or block through which a suitable rod or handle may be thrust to twist the block in removing it from the slots J to remove the spring.

5 According to this invention the brush is pressed tightly by suitable means against the front portion of the brush-holder. In this instance a roller Q is supported in contact with the brush upon the rod R, which passes
10 through the apertures S in the frame A. The rod R bears against the rear portions of the socketed part of the brush-holder and is maintained in position by suitable springs T, which extend between the holding-rods U
15 and the frame and are provided with bent portions V, projecting into notches in the frame. According to this construction the brush is held by spring-pressure against the front portion of the socketed part of the
20 holder and chattering is prevented, while a firm contact is obtained between the brush and the holder. Preferably the rod R may be slipped longitudinally out of the roller Q in order to remove the roller when desired.

25 Suitable means are provided for securing the brush-holder in position relatively to the commutator, in this instance sockets W and X being provided into which the studs Y extend, and suitable insulation Z is provided
30 between said studs and the casing E.

This invention is not to be understood as being limited to the construction described for maintaining the brush tightly against the holder, for other suitable means may be pro-
35 vided for accomplishing the same ends; but by providing the roller-bearing upon the side of the brush it will be seen that the brush may be easily placed within and withdrawn from the socketed portion of the holder. It
40 will also be seen that by maintaining the brush tightly against one side of its socket in the holder the face of the brush will always bear evenly upon the commutator and

make a uniform contact therewith no matter in which direction the armature is rotating. It is difficult to always obtain brushes of exactly the same dimensions, and according to this construction brushes of slightly different dimensions may be used in the brush-holder with efficiency and satisfaction. 50

Without limiting myself to the construction shown and described, I claim, and desire to obtain by Letters Patent, the following:

1. A brush-holder comprising a frame having a brush-socket, a block or key and a spring connected thereto and adapted to bear upon the brush, and curved guides for said block or key, whereby when the block is thrust therein the spring will be wound on the block and the spring tension increased, for substantially the purposes set forth. 60

2. A brush-holder comprising a frame having a brush-socket, a spring, one end of which is adapted to exert pressure upon the brush, a block or key connected to the other end of the spring, and guides or ways constructed to cause rotation of said block and wind the spring thereon as the block is inserted in the ways, for substantially the purposes set forth. 70

3. A brush-holder comprising a frame provided with a socket for the brush, and curved guides or ways, a block or key adapted to said ways, and a spring for maintaining the brush in the socket, said spring being secured to the block or key and partially wrapped around the same, and means for maintaining the block or key within the ways, for substantially the purposes set forth. 75

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 80

HENRY K. BROOKS.

Witnesses:

E. VAN ZANDT,
A. L. O'BRIEN.