Aug. 21, 1923. 1,465.709

P. I. CHANDEYSSON

BRUSH HOLDING MEANS FOR ELECTRIC MOTORS

Filed March 24, 1922 2 Sheets-Sheet 1

Fig. 1.

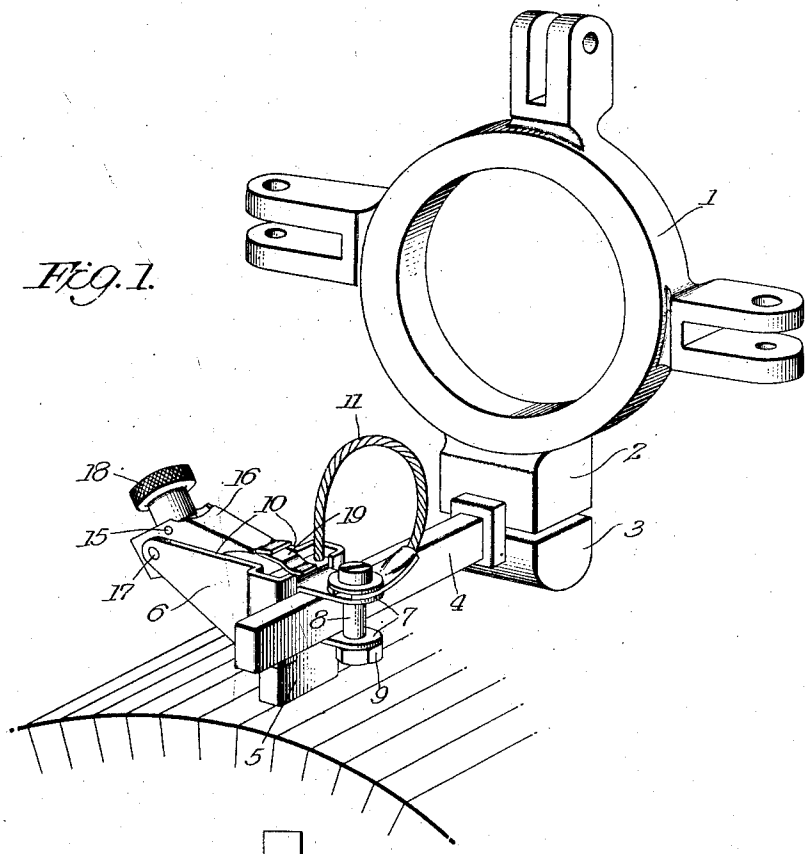

Fig. 2.

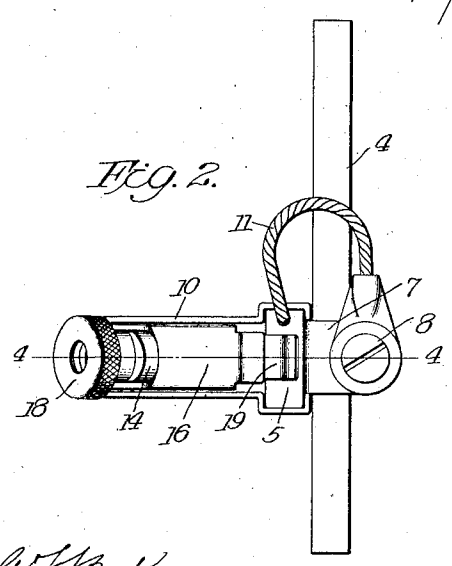

Fig. 3.

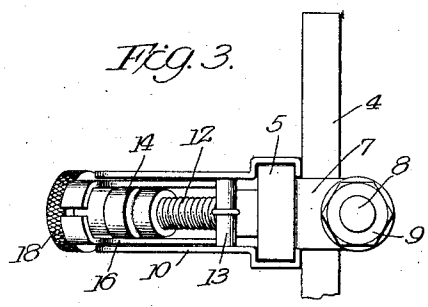

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Fig. 4.

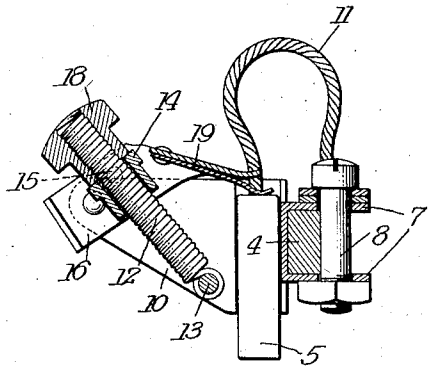


Fig. 5.

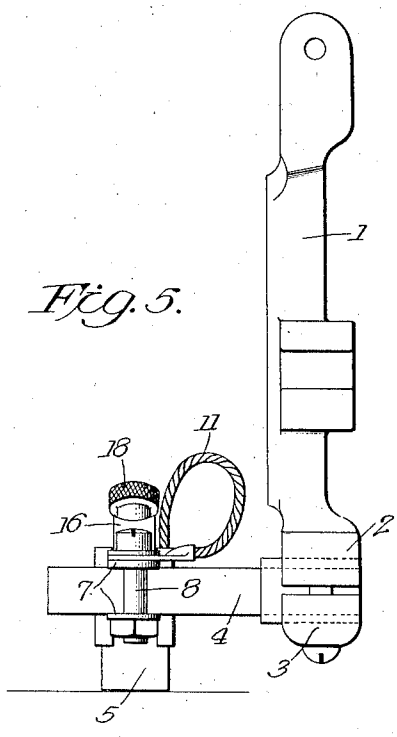
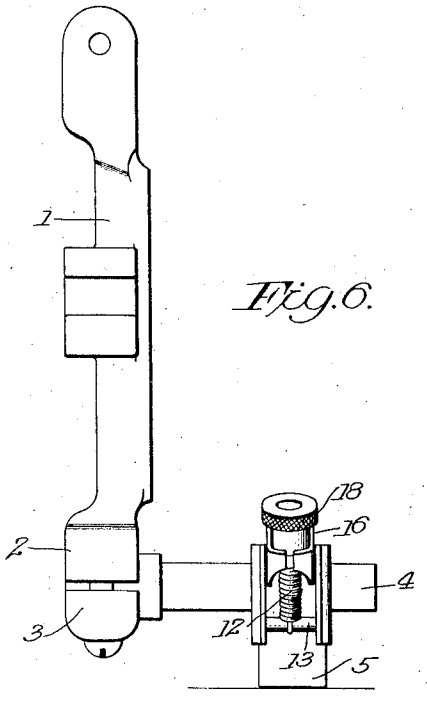


Fig. 6.



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UNITED STATES PATENT OFFICE.

PIERRE ISMAËL CHANDEYSSON, OF ST. LOUIS, MISSOURI.

BRUSH-HOLDING MEANS FOR ELECTRIC MOTORS.

Application filed March 24, 1922. Serial No. 546,412.

To all whom it may concern:

Be it known that I, PIERRE I. CHANDEYSSON, a citizen of the United States, residing at St. Louis, in the county of St. Louis City and State of Missouri, have invented new and useful Improvements in Brush-Holding Means for Electric Motors, of which the following is a specification.

One object of my said invention is the provision of brush holding means calculated to enable a novice to assemble a brush holder in correct manner.

Another object is the provision of a brush holder adapted to position a brush close to a bar for carrying current this in order to assure the shunt from the brush being kept free from the spring means and applied directly to the bar or to means in connection therewith, the pressure exerted by the brush being delivered directly to the bar through its shunt so that the conductivity of the brush holder has no influence on the working of the brush as a current collecting medium.

Another object is the provision of a brush holder embodying a peculiar and advantageous spring arrangement that is calculated to lend itself to a large range of adjustment, and which at the same time is adapted to absorb slight vibrations by direct action or bearing on the brush.

Another object is the provision of a brush holder adapted to hold a brush in such manner relative to the means for adjusting the tension on the brush that the brush can be raised and when raised or moved to a certain point will remain in the position in which it is placed so as to permit of ready examination of the brush.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter described and relatively claimed.

In the accompanying drawings, forming part of this specification:—

Figure 1 is a perspective showing my novel holding means, as a whole, the means illustrated and hereinafter described having been reduced to actual practice and successfully operated.

Figure 2 is a detail plan view showing the brush holder and the bar on which the same is mounted.

Figure 3 is an inverted plan view showing the brush, the brush holder and the bar.

Figure 4 is a section taken in the plane indicated by the line 4—4 Figure 2.

Figures 5 and 6 are end elevations of the improvement.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

Among other elements I illustrate a carrier which is preferably in the form of a frame that includes an annulus 1 and a projection 2 extending radially from the annulus, the said projection 2 being equipped with a clamping member 3 or otherwise adapted to hold, preferably in adjustably fixed position a conductive bar 4 which is generally disposed in a lateral direction to the frame. The said bar 4 is of angular form in cross section, for a purpose hereinafter set forth.

At 5 is a brush which in the present embodiment of the invention is designed to rest in a radial position with respect to a commutator. It will be obvious, however, that by changing the milling of the slot in the projection on the frame 1, the bar 4 can be so arranged as to render the brush 5 leading or trailing. It is to be understood at this point that when the bar 4 is set in any one of the said positions the assembler cannot change said position, and from this it follows that the assembler can only insert the brush holder in the correct manner. This is an important advantage inasmuch as it assures correct assembly of the brush holder by an inexperienced person.

The brush holder is designated by 6 and within the purview of my invention may be adjustably fixed on and to the bar 4 in any approved manner though I prefer to provide the holder 6 at one end thereof with arms 7 to rest at opposite sides of the bar 4 and carry a headed and threaded bolt 8 on which is a nut 9, tightening of which will be attended by clamping and adjustable fixing of the arms 7 on the bar 4. I prefer to make the holder 6 of stamped metal but it is manifestly within the purview of my invention to make the holder of cast metal or of any other appropriate material. In addition to the arms 7 the holder 6 comprises

side plates 10 the portions of which adjacent to the arms 7 being shaped in cross-section to sheath the brush 5. Interposed between one of the arms 7 and the heel of the brush 5 is a flexible conductor 11.

For the adjustment of the tension applied to the brush I employ in the holder 6 a spiral main spring 12, connected at 13 to a cross bar interposed between the side plates 10 and adapted to afford a large range of adjustment, the connection referred to being a pivotal one, and the spring 12 being extended loosely through a yoke 14 pivotally mounted at 15 in a swinging member 16 pivotally mounted at 17 between the side plates 10. Adjustment is attained through the employment of a nut 18 having a thread to match the convolutions of the spring 12, and the spring under tension being adapted to jam its convolutions against the thread of the nut thereby averting the nut working loose. This arrangement I prefer because of its simplicity and efficiency. Carried by and extending beyond the free end of the swinging member 16 is a spring bar 19 which is preferably quite stiff and is adapted to press directly against the brush and thereby absorb slight vibrations.

It will be manifest from the foregoing that my novel brush holder disposes the brush close to the bar 4 which carries the current and that the holder permits the shunt from the brush to be kept free from the spring attached to the bar 4. From this it follows that the pressure exerted from the brush is placed directly against the bar 4 without leverage, and the current gathered by the brush is delivered directly to the bar 4 through its shunt. Hence the conductivity of the brush holder has no influence whatever on the action of the brush as a current collecting medium. Again it will be noticed in my improvement that the position of the brush holder does not depend in any measure on the pressure exerted by the fastening bolt, and that the portion of the brush holder that embraces the brush is disposed near the commutator so that the tendency of flashing over between one part of the brush holder and another is practically averted.

Any desired number of brush holders can be mounted on the bar 4, and in virtue of the construction described any one of the brush holders can be expeditiously and easily removed from the bar 4 without disturbing the other brush holders and without shutting down the apparatus.

I have entered into a detail description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear and exact understanding of the said embodiment. I do not desire, however, to be understood as confining myself to the said specific construction and relative arrangement of parts inasmuch as in the future practice of the invention various changes and modifications may be made such as fall within the scope of my invention as defined in my appended claims.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:—

1. In brush holding means, the combination of a frame having an aperture of angular form in cross-section, a bar of angular form in cross section snugly arranged in said aperture and extending laterally from the frame, and a brush holder secured on said bar and bearing against the same.

2. In brush holding means, the combination of a bar of angular form in cross-section, a brush holder, means on the brush holder and clamping the same to the bar, a brush in the holder, and a flexible electric connection betwen the brush and the said clamping means.

3. In brush holding means, the combination of a bar of angular form in cross-section, a brush holder, means on the brush holder and clamping the same to the bar, a brush movable rectilinearly in the holder, a flexible electric connection between the brush and said clamping means, and means carried by the holder and exerting pressure against the brush.

4. A brush holder comprising means to receive and guide a brush, said means having parallel arms, a swinging member mounted between said arms and provided with a spring to exert pressure against a brush, and an auxiliary connection between the swinging member and the arms including a spring.

5. A brush holder comprising means to receive and guide a brush, said means having parallel arms, a swinging member mounted between said arms and provided with a spring to exert pressure against a brush, and an auxiliary connection between the swinging member and the arms including a spring, and also including an element pivotally mounted in the swinging member and to which said spring is connected.

6. In a brush holder, the combination of a body having a brush receiving portion, a swinging member mounted in said body and adapted to bear against a brush, a spring connected to the body and the swinging member and means regulating the tension of the spring; the said swinging member being equipped with a pivoted yoke, and the spring being extended loosely through said yoke and connected at one end with the body, and the tension regulating means being in the form of a nut threaded to engage the convolutions of the spring and to bear against said yoke.

In testimony whereof I affix my signature.

PIERRE ISMAËL CHANDEYSSON.