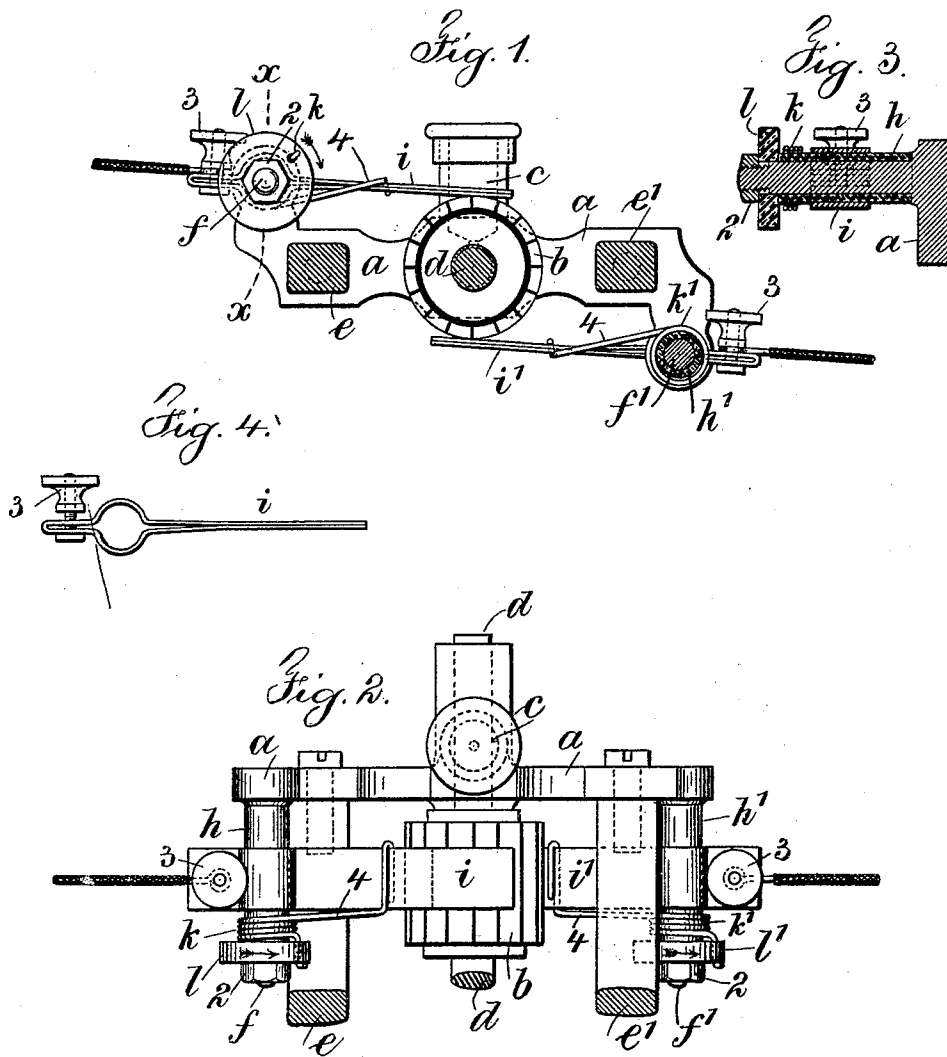


(No Model.)

C. C. DUSENBURY.
COMMUTATOR BRUSH.

No. 551,856.

Patented Dec. 24, 1895.



Witnesses

Chas. H. Smith
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UNITED STATES PATENT OFFICE.

CALEB COLES DUSENBURY, OF LAKE MAHOPAC, NEW YORK.

COMMUTATOR-BRUSH.

SPECIFICATION forming part of Letters Patent No. 551,856, dated December 24, 1895.

Application filed June 10, 1895. Serial No. 552,215. (No model.)

To all whom it may concern:

Be it known that I, CALEB COLES DUSENBURY, a citizen of the United States, residing at Lake Mahopac, in the county of Putnam and State of New York, have invented a new and useful Improvement in Commutator-Brushes, of which the following is a specification.

My invention relates to the construction of commutator-brushes and the supports therefor to the frame of the electric motor, and my invention is especially adapted to small electric motors. Heretofore in these machines the commutator-brushes have usually been carried upon arms connected to one of the end frames of the motor, the insulation being effected at the point of union of the frame and arms, and these joints have not been secure or rigid.

In carrying out my invention I construct the end frame with two metal arms for the brushes, and which arms are made integral with the end frame or permanently connected thereto. Around these arms are sleeves of insulating material, and upon these the brushes of sheet metal are mounted and provided with binding-posts or connections for the wires. Helical springs are provided around these insulating-sleeves, one end of each spring being extended as an arm to engage one brush and the other end of each spring engaging a friction-disk of insulating material adapted to apply a tension on the spring and brush, which tension can be increased or reduced at pleasure.

In the drawings, Figure 1 is an elevation partially in section, showing my improvement. Fig. 2 is a plan view of the same. Fig. 3 is a longitudinal section at *xx*, Fig. 1, through one arm, and Fig. 4 is a side elevation of the brush alone.

The end frame *a* is adjacent to the commutator *b* and is provided with an oil-cup *c* for lubricating one end of the armature-shaft *d*. Arms *e e'* extend out from the motor-frame, and to them the cross-frame *a* is connected. This end frame *a* is made with two metal arms *f f'*. These are preferably cast integral with the end frame *a* and turned true thereafter, but may be fitted thereto and riveted and soldered. These arms have threaded ends with nuts 2 2. Sleeves *h h'* of insulating ma-

terial, such as hard rubber, surround the arms *f f'* for the greater part of their length, and friction-disks *l l'* of insulating material, such as hard rubber, are upon the ends of the arms back of the nuts 2 2, which nuts act to hold the disks *l l'* and clamp them against the ends of the sleeves *h h'* and thus produce a friction to prevent the accidental turning of the disks. The brushes *i i'* are preferably flat strips of thin metal bent double and surrounding the insulating-sleeves *h h'* and are provided with binding-posts 3 3 or equivalent means for connecting thereto the electric wires, and the ends that contact with the commutator *b* are preferably secured together by solder. These brushes can be turned over if worn and can be slipped off the insulated sleeve or replaced quickly by new ones.

Helical springs *k k'* surround the sleeves *h h'* between the brushes *i i'* and disks *l l'*, and one end of each spring is extended as an arm 4, that acts by a surrounding right-angled looped end upon the brush, and the other end of said spring is bent at right angles and passes through a hole in the disk.

By turning the disks *l l'* in the direction indicated by the arrows tension is applied to the springs *k k'*, which is transmitted to the brushes to cause them to bear with increased force on the commutator-plates. By turning the disks in the reverse direction the tension and pressure of the brushes are lessened. The disks are clamped by the nuts after the springs have been put in place, and the desired tension is effected by turning the disks thereafter.

In my improvement the arms supporting the brushes are secure and rigid, and the sleeves around said arms provide the most perfect insulation, and the disks and springs apply the required tension on the brushes.

I claim as my invention—

1. The combination with the commutator brushes, of the end frame *a*, arms *f f'* of metal permanently united therewith, sleeves of insulating material surrounding said arms and upon which the brushes are mounted, and an adjustable device for applying pressure to the brushes, substantially as set forth.

2. The combination with the commutator brushes of the end frame *a*, arms *f f'* of metal permanently united therewith, sleeves of in-

5 sulating material surrounding said arms and upon which the brushes are mounted, helical springs surrounding said sleeves and having one end extended to engage the brushes and means for engaging the other ends of said springs for applying a tension thereto and a pressure upon the brushes, substantially as set forth.

10 3. The combination with the commutator brushes, of the end frame *a* arms *f f'* of metal permanently united therewith, and having threaded ends with nuts 2, 2, sleeves of insulating material surrounding said arms and upon which the brushes are mounted, helical
15 springs surrounding said sleeves and each having one end extended and looped to engage the brush and the other end with a short turn, disks of insulating material upon said arms clamped by said nuts and through open-

ings in which said short ends of the springs 20 pass whereby on partially turning the disks a tension is produced on the springs and a pressure to act upon the brushes to a greater or less extent as desired, substantially as set forth.

25 4. The combination with the end frame and its integral arms, of the sleeves of insulating material upon said arms and the brushes formed of flat strips of metal bent double and surrounding the said sleeves and provided 30 with attaching means for the electric wires, substantially as set forth.

Signed by me this 4th day of June, 1895.

C. COLES DUSENBURY.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.