

J. L. COWEN.
 ARMATURE BRUSH HOLDER FOR ELECTRIC TOY DYNAMOS.
 APPLICATION FILED APR. 15, 1920.

1,405,497.

Patented Feb. 7, 1922.

Fig. 1,

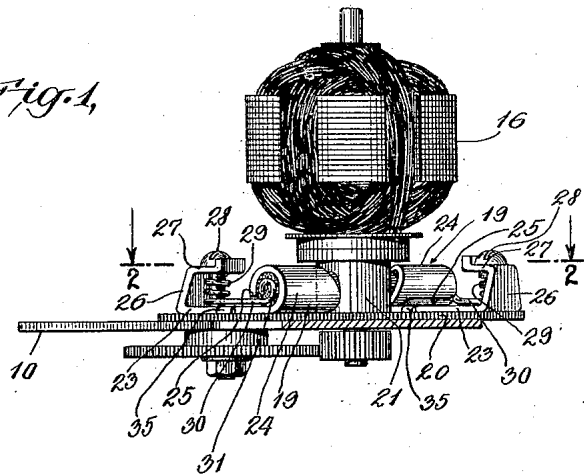


Fig. 5,

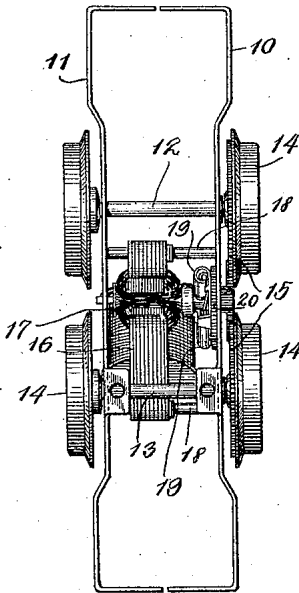


Fig. 2,

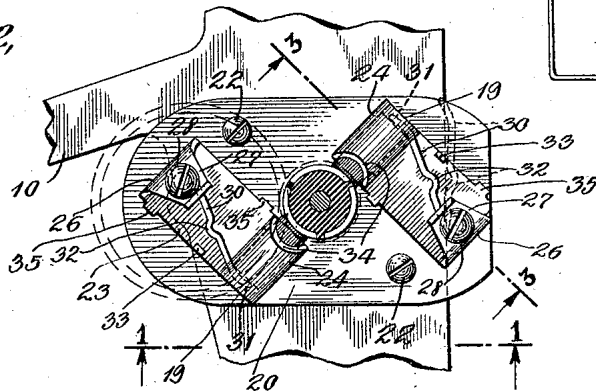
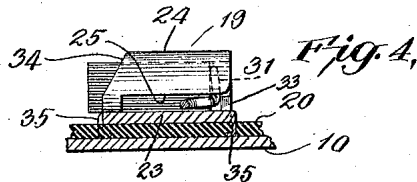
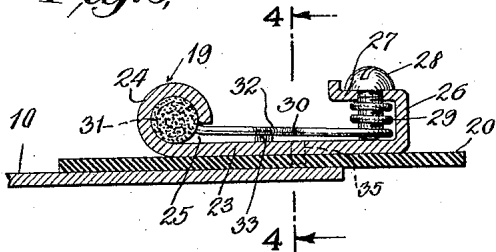


Fig. 3,



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ARMATURE BRUSH HOLDER FOR ELECTRIC TOY DYNAMOS.

1,405,497.

Specification of Letters Patent. Patented Feb. 7, 1922.

Application filed April 15, 1920. Serial No. 373,994.

To all whom it may concern:

Be it known that JOSHUA L. COWEN, a citizen of the United States, and resident of the city of New York, in the county of New York and State of New York, has invented certain new and useful Improvements in Armature Brush Holders for Electric Toy Dynamos, of which the following is a specification.

This invention relates to brush holders for armatures of toy motors.

In toy motors, such for example as the electric motors used in toy electric cars, a brush holder construction has heretofore been used comprising a tube in which the brush is held and a brass compression spring mounted in the tube to press against the brush and feed the same up to the commutator and the tube then closed at the top by detachable means such as a cap. Many practical disadvantages and difficulties have been had with this and other prior constructions. Thus, the compression spring being enclosed in a closed tube poor heat radiation was obtained and in short time the heat destroyed the temper of the spring. The brushes have further been inaccessible for the purpose of removal or adjustment by reason of the location thereof in the closed tube and such removal or adjustment has entailed a tedious awkward operation by reason of having first to remove the top cap and then the spring before the brush is freed. This difficulty is particularly had where the toy motor is used in connection with an electric car where it is positioned on a frame and cross-pieces as will hereinafter appear. The top cap has further given rise to practical difficulty by reason of its being readily lost and difficult to replace.

One object, therefore, of this invention is to provide in a toy motor for electric toys an armature brush holder which shall be free from the difficulties and disadvantages of prior constructions as hereinabove enumerated.

Among other objects of this invention are to provide a brush holder of the type described which shall be readily accessible for removing, replacing or repairing the brushes; to provide a device of this type which shall afford good effective spring contact to feed the brush up to the armature; to provide a toy motor brush holder which shall have means for easily removing the brush, and which shall be so constructed

as to afford adequate and efficient heat radiation.

A dominant feature of the invention is the accomplishing of these and other objects in a one-piece construction formed from sheet metal.

The invention further contemplates the provision of a spring construction for feeding the brush up to the armature which may be manipulated or otherwise operated without removing or detaching the spring so as to permit the brushes to be removed or replaced without any interference from the spring, the spring tension being entirely released when desired without removing or otherwise detaching the spring member.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the apparatus hereinafter described and of which the scope of application will be indicated in the following claims.

In the accompanying drawings, in which is shown one of various possible illustrative embodiments of this invention,

Fig. 1 is a plan view partly in section showing the brushes and brush holder in their position relative to the armature of an electric toy motor secured to the frame-work of a toy. Fig. 1 is taken along line 1-1 of Fig. 2.

Fig. 2 is a sectional view cut along line 2-2 of Fig. 1;

Fig. 3 is a detailed sectional view of the brush holder cut along line 3-3 of Fig. 2;

Fig. 4 is a further detailed view of the brush holder taken at right angles of Fig. 3 and cut along line 4-4 thereof; and

Fig. 5 is a plan view of a complete electric car showing the frame-work and wheels and the electric motor and field with the brush holder and brushes in position relative to the armature of the motor and the frame-work and other parts of the toy and showing clearly how readily the brushes are accessible by reason of applicant's novel construction.

Referring in detail to the drawing, there is shown in Fig. 5 an electric toy car comprising the side frame members 10, 11, axles 12 and 13 which carry the wheels 14 adapted to be propelled by gearing 15 driven by the electric toy motor 16. This motor and the field 17 are mounted on cross pieces such as 18 secured to the frame members. The

brush holders 19 are mounted on a suitably shaped piece 20 of insulating material such as composition or fiber which is secured to one of the side frame members such as 10 as by the screws 22 so as to dispose the brush holder and brushes held therein in operative relation to the commutator 21 of the motor.

The brush holder, an embodiment of the invention shown in the drawing will now be described. As will be clear from the drawing, the holder is formed from one piece of material preferably sheet brass or the like metal to provide strength and durability, shaped to provide a body portion 23 adapted to rest flush against the attaching piece 20, one end of which is turned up to provide a cylindrical holder 24 open at both ends and also open laterally as at 25 by a space left between the body portion 23 and the free lateral edge of the cylindrical holder. The brush holder being thus open at both ends and at the side, adequate circulation of air around and through the holder may thus be had to afford the necessary heat radiation. The other end of the body portion is upturned to form the upstanding bracket member 26 having a top flange member 27 through which passes a screw or other supporting member 28 on which is wound the coil portion 29 of a spring 30. This spring is formed with a coiled head portion 31 adapted to press against the end of the brush so as to feed it up to the commutator as will be readily understood. It will be noted that the spring for feeding the brush up to the commutator is exposed and does not enter into the cylindrical or tubular portion in which the brush is held. Being thus open to the air, the heat is readily carried away or radiated and does not affect the temper of the spring. To facilitate the manipulation of the spring in moving it out of contact with the brush, the body of the spring is formed with an indent or notch 32 wherein a small tool may be inserted so as to move the spring into dotted position as shown in Fig. 2 against the tension of the coil portion 29 and away from the brush and beyond a stop 33 in the form of a projection upstanding from the body portion 23 of the brush holder. When in this dotted position shown in Fig. 2 abutting the stop 33, the spring tension on the brush is easily removed and the brush may be removed and replaced without any interference from the spring as will be readily understood. The forward end of the cylindrical brush holding portion 24, that is the end near the armature, is cut away at the top as at 34 to provide easy access for a tool in removing the brush by pushing the same out to the rear end or in pushing in frayed layers of the brush away from the commutator. The brush holders may be secured to the insulating piece 20

in any suitable manner. Thus, the body portion 23 may be formed with the projections 35 adapted to enter the openings or slots in the piece 20 and bend over so as to be secured thereto. In removing the brush, one needs only to move the spring 30 into dotted position shown in Fig. 2 as already described and by tipping the toy car the brush will either drop out or the brush may be pushed out by a tool taking holding through the cut-away portion 34. As will be seen from Fig. 5, the removal of a brush is easily accomplished since the brush holders are readily accessible and no removing or disassembling of parts such as caps and springs and the like are necessary for this purpose.

It will thus be seen that there is provided apparatus in which the several objects of this invention are achieved and which is well adapted to meet the conditions of practical use in connection with electric toy motors.

As various possible embodiments might be made of the above invention and as various changes might be made in the embodiment above set forth, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. In an electric toy motor or generator, an armature brush holder having a brush holding member and a spring member exterior to said brush holding member adapted to bear against the brush to feed the latter to the commutator, such spring member being formed with an indent for the manipulation thereof to move the same out of contact with and away from the brush.

2. An armature brush holder comprising a sheet of material formed with a body portion for attaching the holder to a support, one end of said body portion being overturned to provide a holding receptacle for a brush and the opposite end thereof being upfolded to provide a supporting member for means for feeding the brush to the commutator.

3. An armature brush holder comprising a sheet of material formed with a body portion for attaching the holder to a support, one end of said body portion being overturned to provide a holding receptacle for a brush and the opposite end thereof being upfolded to provide a supporting member for means for feeding the brush to the commutator, said body portion being formed with means for the securing thereof to the support.

4. In an electric toy motor or generator in combination with a flat supporting member, an armature brush holder comprising a sheet of material formed with a body portion

adapted to be flush with said support for attachment thereto, the material being overturned at one end of said body to provide a substantially cylindrical holding receptacle
5 for a brush, and said material upstanding from the end of said body portion to provide a bracket and a resilient member held at one end in said bracket and extending therefrom to said brush holding receptacle.

10 5. In an electric toy motor or generator, in combination with a flat supporting member, an armature brush holder comprising a sheet of material formed with a flat body
15 portion adapted to be flush with said support for attachment thereto, the material being overturned at one end of said body to provide a substantially cylindrical holding receptacle open at both ends for a brush,
20 said overturned portion being spaced from the body portion so as to provide a longitudinal opening, said material upstanding

from the end of said body portion to provide a bracket and a resilient member held at one end in said bracket and extending therefrom to said brush holding receptacle, with the
25 free end thereof disposed opposite one of the open ends of said brush holding receptacle.

6. In an electric toy motor or generator, in combination a flat supporting member, 30 an abutment thereon, an armature brush holder held on said supporting member, and having a brush holding receptacle, a resilient member disposed in operative relation to said brush holding receptacle and having
35 an indent formed therein adapted to abut against said abutment as and for the purpose described and specified.

Signed at New York city, in the county of New York and State of New York, this 10th
40 day of April A. D. 1920.

JOSHUA L. COWEN.