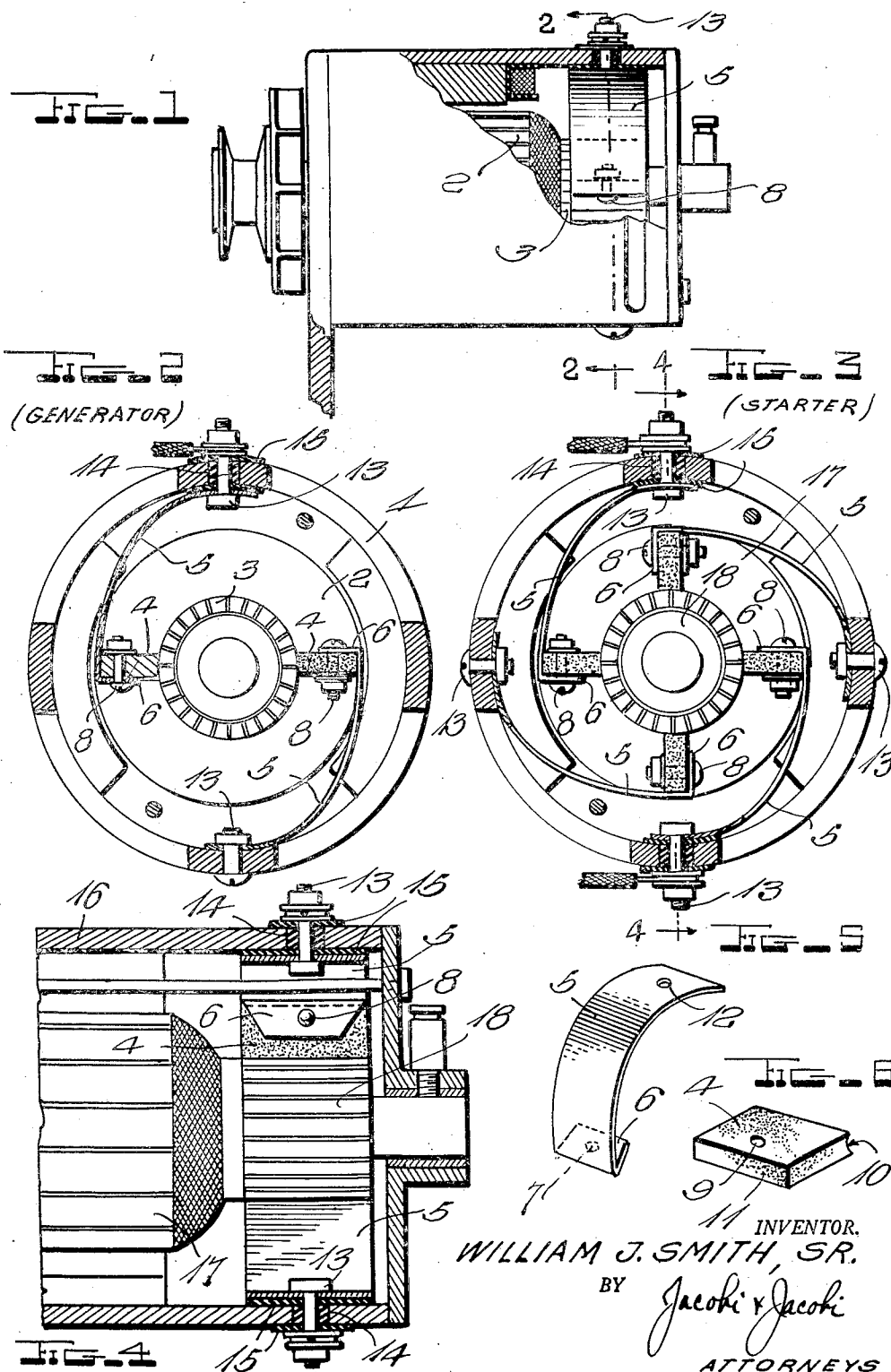


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GENERATOR AND STARTER

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1 Claim. (Cl. 171—323)

1

This invention relates to generators and starters and more particularly to holders for the carbon brushes which bear against the commutator.

At the present time, the brushes of generators and starter motors are carried by resilient strips which are coiled to form springs by means of which the brushes are urged towards the commutator of the armature. These mountings have been found unsatisfactory as they become clogged by grease and dirt which accumulates between convolutions of the spring and tend to prevent the brushes from being held in close contact with the commutator and gaps will then occur and cause damage to the commutator and in efficient operation of the generator or motor.

It is, therefore, one object of the invention to provide brush holders formed from strips of resilient metal which are bowed or arcuate longitudinally and are thus free from coils in which grease and dirt may accumulate.

Another object of the invention is to so form the resilient mounting strips that free ends will be provided with flanges or tongues against which carbon brushes may be firmly secured by bolts passed through the brushes and the tongues, the brushes being thus removably mounted so that when it is necessary, they may be easily removed and new ones applied.

Another object of the invention is to provide brush mountings so constructed that they may be installed in either an electric motor or a generator.

The invention is illustrated in the accompanying drawings wherein:

Figure 1 is a view showing a generator partially in side elevation and partially in section and equipped with my improved brush holders.

Figure 2 is a vertical sectional view taken transversely through the generator along the line 2—2 of Figure 1.

Figure 3 is a sectional view similar to Figure 2 taken transversely through a starter motor equipped with my improved brush holders.

Figure 4 is a vertical sectional view taken longitudinally of the motor along the line 4—4 of Figure 3.

Figure 5 is a perspective view of a brush holder having the improved construction.

Figure 6 is a perspective view of a brush.

In Figures 1 and 2, there has been shown an electric generator equipped with brush holders of the improved construction. This generator has the usual casing 1 in which is mounted an armature 2 of conventional formation and a commutator 3 at one end of the armature. The com-

2

mutator occupies one end portion of the casing and is engaged by brushes 4 carried by strips 5 which are forms of resilient metal. These strips or resilient brackets are curved or bowed longitudinally for their entire length and each has one end portion bent to form a tongue or flange 6 formed with an opening 7 through which a bolt 8 is passed, the bolt also passing through an opening 9 formed in the companion brush so that the brush will be firmly secured flat against the tongue. The free end of the brush has a concaved edge face 10 and its attached end has a flat edge face 11 which has abutting face to face engagement with the mounting strip immediately adjoining the tongue. By so forming the mounting bracket and the brush, the brush will have close contacting engagement with both the tongue and the adjoining portion of the resilient strip and the brush will be prevented from having turning movement about the bolt by which it is secured to the bracket. The other end of the resilient strip is formed with an opening 12 bolt 13 by means of which the strip or bracket is secured to the cylindrical wall of the casing, and upon referring to Figure 2 it will be seen that one bracket has grounding contact with the casing while the other bracket is insulated from the casing by an insulating sleeve 14 and discs 15 through which its bolt 13 passes. The resilient strips or brackets are of such curvature that they urge the brushes towards the commutator and press them against the commutator with sufficient force to cause the generator to function properly. It should be noted, however, that since the brackets are formed from wide strips of resilient metal curved longitudinally in a single arc throughout their length, instead of being bent to form a spiral spring, grease and dirt can not collect upon the brackets and prevent proper action of the resilient brackets. When it is necessary to make repairs or replacements, the bolts 8 and 13 may be easily removed.

The brush holders shown in Figures 3 and 4 are of the same construction as those shown in Figures 1 and 2, but in Figures 3 and 4 they form elements of an electric motor of the type used as a starter motor for the internal combustion engine of a motor vehicle. This motor has a casing 16 in which is mounted an armature 17 having a commutator 18 at one end engaged by the brushes. Four brushes are provided for the motor instead of the two provided for the generator, and upon referring to Figure 3 it will be seen that two of the brackets are insulated from the casing and the other two brackets grounded upon the casing.

3

Since the brackets carrying the brushes are of the same construction for a motor and a generator, the same reference numerals have been applied to the brackets and the brushes in Figures 3 and 4 as in Figures 1 and 2. The fact that the brackets and the brushes carried thereby are of duplicate construction makes them interchangeable and allows them to be used for either a motor or a generator.

From the foregoing description of the construction of my improved invention, the method of applying same to use and the operation thereof will be readily understood, and it will be seen that I have provided a simple, inexpensive and efficient means for carrying out the various objects of the invention. While I have particularly described the elements best adapted to perform the functions set forth, it is apparent that various changes in form, proportion and in the minor details of construction may be resorted to, without departing from the spirit or sacrificing any of the principles of the invention.

Having thus described the invention, what is claimed is:

In an electric power unit, a casing, an armature and a companion commutator rotatably mounted in the casing, brushes disposed radially of the commutator and having side faces and inner and outer end bores, said brushes having their inner end faces bearing against the commutator, brackets for said brushes each consist-

4

ing of a strip of resilient sheet metal bowed longitudinally and having its outer end mounted upon the inner surface of the wall of the casing, said brackets extending circumferentially of the casing in diverging relation thereto towards the commutator and each having its free inner end portion extending across the outer end face of the companion brush and bent to form a tongue extending towards the commutator in overlapping engagement with a side face of the companion brush, and bolts passing through the brushes and the overlapping tongues of the resilient strips and removably securing the brushes tightly against inner side faces of the tongues with adjoining portions of the resilient strips bearing against the outer ends of the brushes and pressing the brushes into contacting engagement with the commutator.

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