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BRUSH HOLDER

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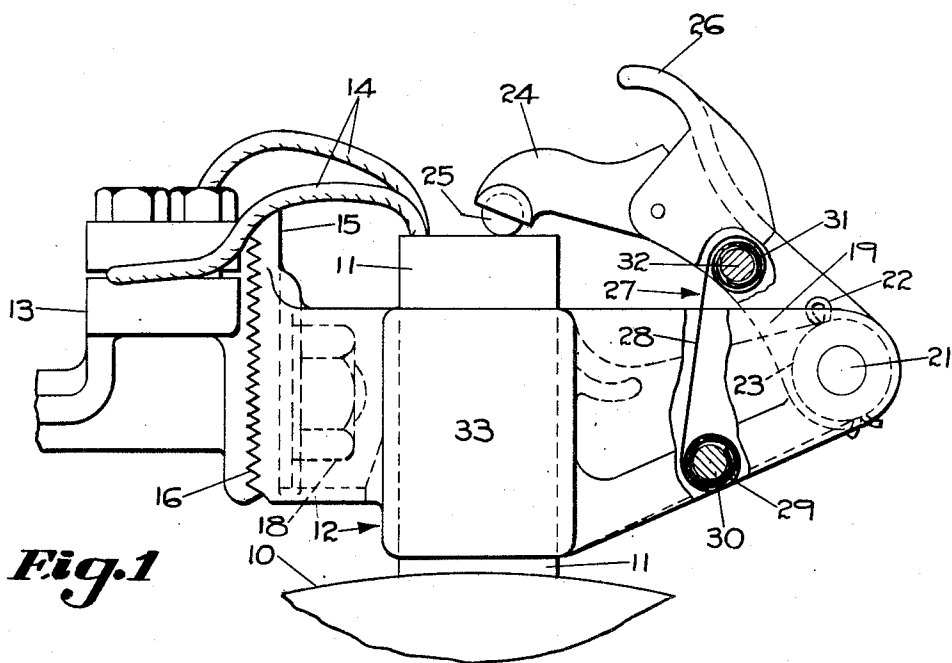


Fig. 1

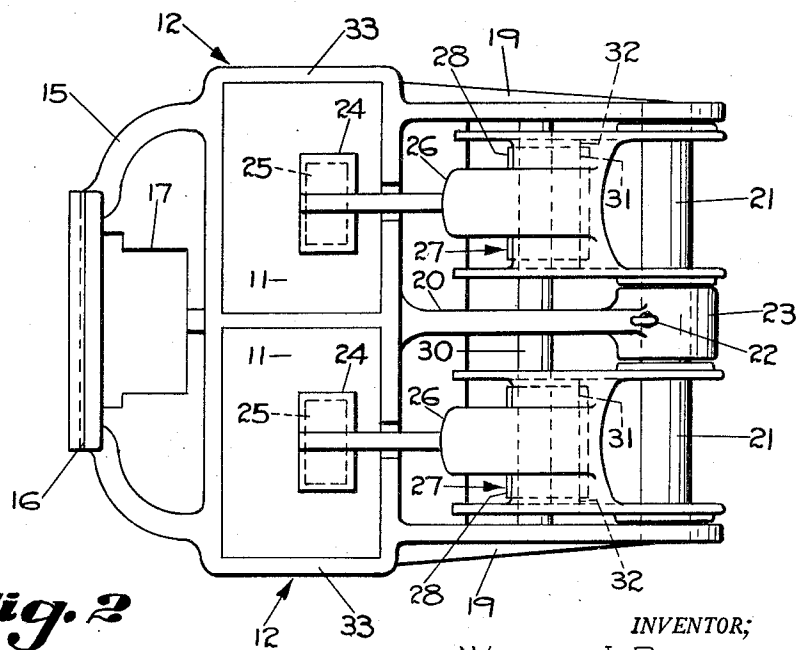


Fig. 2

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BRUSH HOLDER

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6 Claims. (Cl. 310-246)

This invention relates to brush holders for commutators. In general, the invention comprises an improved construction for brush holders.

One of the objects of the present invention is to provide a simplified construction which eliminates the levers, hammer springs and adjusting mechanisms heretofore used and which facilitates the mounting and servicing of brushes.

Another object of this invention is to provide an elastic member for exerting a constant pressure between the brush hammer and the brush at all times and whereby the brush is held against the commutator under constant tension.

Another object of the invention is to provide an automatic take-up means which insures constant pressure and tensioning of the brush hammers against the brushes at all times as the brushes wear.

Additional objects and advantages of the invention will be apparent from the attached drawings, the following description and the appended claims, wherein the novel features and combinations are set forth.

In the accompanying drawings, wherein a preferred embodiment only of the invention is illustrated:

Fig. 1 is a side elevational view of a brush holder constructed in accordance with the present invention, a part thereof being broken away to show the tensioning means more fully; and

Fig. 2 is a top plan view of the brush holder shown in Fig. 1.

Referring further to the drawings, in Fig. 1 the outer surface of a commutator of an electric motor is shown at 10. The brushes 11 at their lower ends are in contact with the commutator, being mounted within the brush holder indicated generally at 12. A bracket 13 attached to the motor frame, for example, or other support which is not shown, carries the leads 14 which are connected to the brushes 11.

The brush holder 12, as seen most clearly in Fig. 2, is provided with a connecting member 15 having a threaded or serrated surface 16 adapted to engage a complementary surface on the bracket 13. A bolt, not shown, extends through the collar portion 17 of the connecting member from the bracket 13 and receives the nut 18 which provides for connecting the brush holder to the bracket 13.

A pair of integral arms 19 project outwardly, one from each end of the main body portion 33 of the brush holder 12, Fig. 2. An arm 20 intermediate of the arms 19 is formed as an integral part of the brush holder and has its outer end bored to receive the pin 21. The arms 19 are journaled at their outer ends to receive the ends of pin 21. A cotter key 22 extends through the collar portion 23 of arm 20 and pin 21 to secure the latter in position.

The brush hammers 24, a pair of which is shown in Fig. 2, are similar in construction and operation. Each hammer 24 has a renewable cylindrical contact element

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25 at one end thereof engaging a brush 11 and provides for applying pressure to hold the brush at its lower end in contact with the commutator 10. At its other end, each of the hammers 24 is pivotally connected to the pin 21. A finger grip 26 connected to each of the hammers 24 provides for manually raising the hammer when such action is desired as for servicing or adjusting operations.

Means, indicated generally at 27, for providing a tensioning action with the hammer 24 exerting a constant pressure against the brush comprise an elastic member in the form of a flat spring 28 made of spring steel or other appropriate metal. As seen in Fig. 1, the lower end of the spring 28 is coiled, as indicated at 29, about a pin 30 mounted between the arms 19 and 20 intermediate of their ends. The upper end of spring 28 is coiled, as indicated at 31, about a pin 32 projecting between the sides of the brush hammers 24 intermediate of their ends and carried thereby.

In operation the flat spring means 27 is elastic and provides a constant force which is exerted by the brush hammers 24 against the brushes 11. By prestressing flat spring stock it is caused to roll into a solid coil with each section of the coil pressing tightly against the other. The constant tensioning action between the brush holder and the brushes is provided by unrolling the free end of the coil formed, as described above, and allowing the unrolled end to reroll itself about the pin 30, for example. The other end of the coil is then allowed to reroll itself about the pin 32. Force between the coils is developed because the ends of the straightened section try to return to the natural coil form. The intensity of the force, or pressure thus developed, depends upon the thickness and width of the stock used to form the spring 28 plus the amount of prestress worked into it. The tensioning action thus developed provides an automatic take-up and constant pressure on the brushes as they wear, which advantage cannot be obtained with screws and levers as heretofore used.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended, and applicant therefore wishes not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of the invention, what is desired to secure by Letters Patent of the United States is:

1. A brush holder for receiving a brush and holding said brush in contact with a commutator comprising, a body member having a receptacle for the brush, a hammer pivotally mounted on the body member and including means adapted to engage the brush to urge the brush into contact with the commutator, tension means extending between the hammer and the body member urging the hammer into contact with the brush, said tension means having prestressed opposite ends coiled on the body member and on the hammer, said coiled ends tending to coil themselves further on the hammer and body member thereby urging the hammer into contact with the brush.

2. A brush holder for receiving a brush and holding said brush in contact with a commutator comprising, a body member having a receptacle for the brush, a hammer pivotally mounted on the body member and including means adapted to engage the brush to urge the brush into contact with the commutator, tension spring means extending between the hammer and the body member urging the hammer into contact with the brush, said tension spring means comprising a straight portion with the opposite ends thereof coiled on the body member and

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on the hammer, said tension spring means being prestressed and the coiled ends tending to coil themselves further on the hammer and body member thereby urging the hammer into contact with the brush.

3. A brush holder for receiving a brush and holding said brush in contact with a commutator comprising, a body member having a receptacle for the brush, a hammer having means adapted to engage the brush to urge the brush into contact with the commutator, constant pressure tension spring means extending between the hammer and the body member urging the hammer into contact with the brush, said tension spring means having prestressed opposite ends coiled on the body member and on the hammer, said coiled ends tending to coil themselves further on the hammer and body member thereby urging the hammer into contact with the brush and applying a constant pressure to the brush.

4. A brush holder for receiving a brush and holding said brush in contact with a commutator comprising, a body member having a receptacle for the brush, a hammer pivotally mounted on the body member and including means adapted to engage the brush to urge the brush into contact with the commutator, tension means extending between the hammer and the body member urging the hammer into contact with the brush, a pin on the body member and a pin on the hammer, said tension means having prestressed opposite ends coiled one on each of said pins, said coiled ends tending to coil themselves further on the pins thereby urging the hammer into contact with the brush.

5. A brush holder for receiving a brush and holding said brush in contact with a commutator comprising, a body member having a receptacle for the brush, a hammer pivotally mounted on the body member and including means adapted to engage the brush to urge the brush

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into contact with the commutator, tension spring means extending between the hammer and the body member urging the hammer into contact with the brush, a pin on the body member and a pin on the hammer parallel to the first said pin, said tension spring means comprising a straight portion with the opposite ends thereof coiled one on each of said pins, said tension spring means being prestressed and the coiled ends tending to coil themselves further on the pins thereby urging the hammer into contact with the brush.

6. A brush holder for receiving a brush and holding said brush in contact with a commutator comprising, a body member having a receptacle for the brush, a hammer having means adapted to engage the brush and urge the brush into contact with the commutator, tension means extending between the hammer and the body member urging the hammer into contact with the brush, said tension means having prestressed opposite ends coiled on the body member and on the hammer, said coiled ends tending to coil themselves further on the hammer and body member thereby urging the hammer into contact with the brush.

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