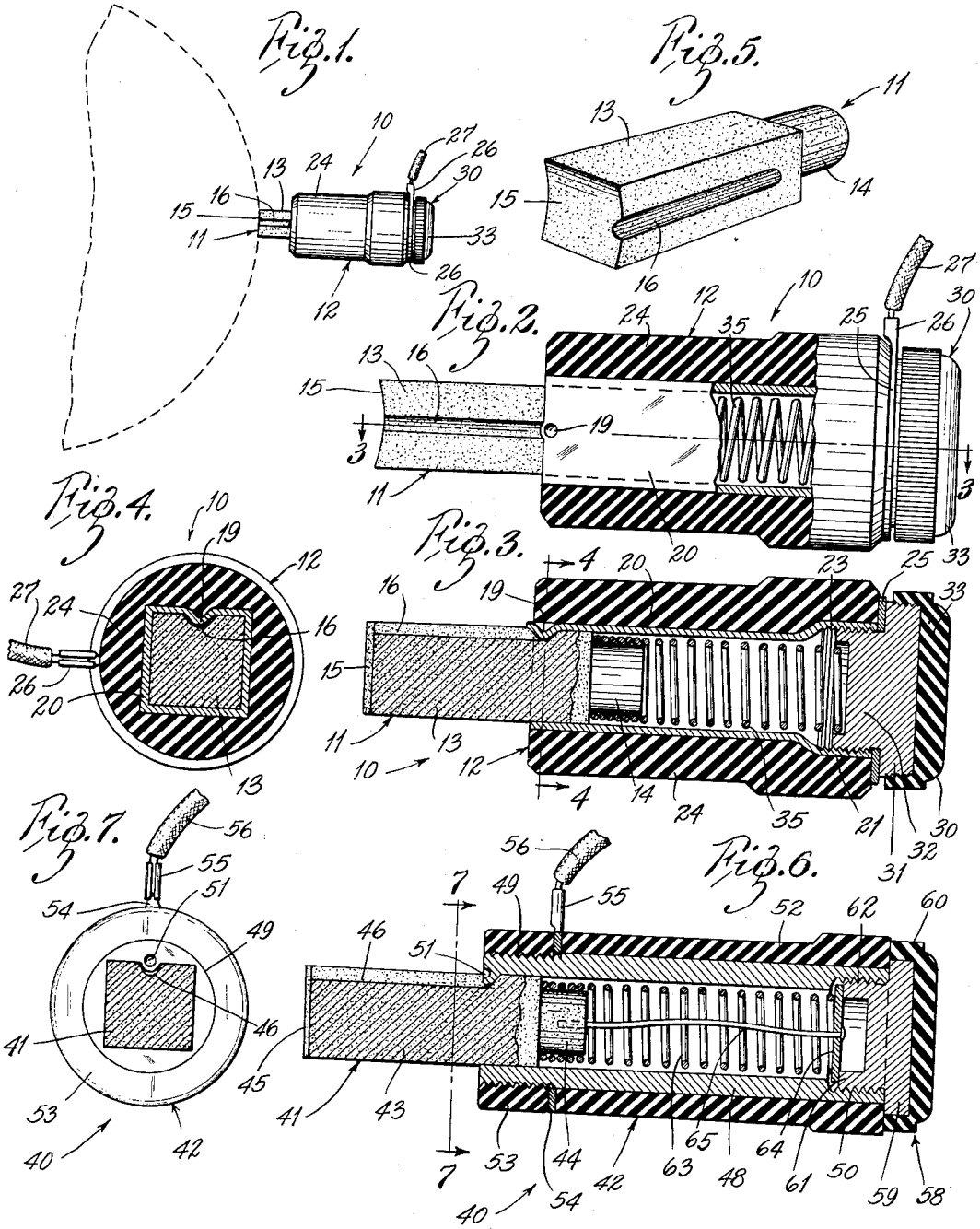
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MOTOR BRUSH ASSEMBLAGE

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MOTOR BRUSH ASSEMBLAGE

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The present invention relates generally to electrical brushes, and more particularly to a brush assemblage which embodies means for preventing a brush element per se from being ejected from its supporting casing during the operative use of the assemblage.

An object of the present invention is to provide a brush assemblage of the brush and casing type, which includes means for preventing the ejection of the brush from the casing during use of the assemblage.

Another object is to provide a brush assemblage which includes a brush element having a groove along a predetermined length of one side, and a casing having means for cooperating with the grooved brush to prevent its ejection from the casing in a direction of use.

Another object is to provide a brush assemblage which includes a brush that is non-ejectable in use towards the commutator.

Another object is to provide a brush assemblage which includes means for preventing the usual brush ejector spring from expanding against the commutator.

Another object is to provide a brush assemblage including novel means for preventing the brush from being ejected from its casing which is simple in construction, easy and inexpensive to manufacture, and efficient and effective in operation.

Other objects and advantages are apparent from the following description, taken in conjunction with the accompanying drawing, in which:

Fig. 1 is a side view of a brush assemblage including one preferred embodiment of the present invention, the assemblage being shown in operative disposition relative to a commutator which is diagrammatically drawn;

Fig. 2 is a side view of a brush assemblage including one embodiment of the present invention, parts being broken away and parts being shown in section for clarity of illustration;

Fig. 3 is a section on the line 3—3 of Fig. 2, a portion of the brush being shown in plan view for purposes of clarity;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a perspective view of a brush;

Fig. 6 is a section, taken similarly to Fig. 3, of a modified brush assemblage which includes a modification of the invention shown in Figs 1–4; and,

Fig. 7 is a section on the line 7—7 of Fig. 6.

Referring to the drawing more particularly by reference numerals, 10 indicates generally a brush assemblage which includes one preferred embodiment of the present invention. The brush assemblage 10 includes a brush 11, and a casing 12.

The brush 11 is a conventional graphite brush including a main elongated body 13 of square cross-section and a reduced extension 14 of circular cross-section. The body 13 has a concave commutator contacting end 15. In one side of the body 13 there is a longitudinal centrally disposed groove 16 which terminates in a dead end to form a shoulder just short of the reduced extension 14.

The casing 12 includes a hollow metal core 20 of square cross-section. One end of the core 20 has an enlargement 21 of circular cross-section which has internal threads 23. At the other end of the core 20 is an inwardly extending boss 18 which is located centrally of and extends inwardly from one side of the core 20. The boss 19 is of a size to extend into the groove 16 for cooperation therewith.

A cover 24 of Bakelite, or the like, of circular cross-section, surrounds the core 20. A flat ring 25 having a lead clamp 26 extending radially therefrom which grips a lead 27 is disposed against the free end of the enlarged portion 21 and the cover 24, and is maintained in position by a casing cap generally designated 30 which comprises a metal plug 31 having an externally threaded extension 32 and a Bakelite cover 33 having a knurled exterior. The cap 30 is screwed into engaging position by the threads of the extension 32 engaging the internal threads 23 of the enlarged portion 21.

A helical spring 35 is disposed within the hollow core 20. One end of the helical spring surrounds the extension 14 and abuts the body portion 13. The other end of the spring 35 is disposed against the extension 32.

In Figs. 6 and 7 there is shown a modified brush assemblage 40 which incorporates a modified form of the present invention. The brush assemblage 40 includes a brush 41 and a casing 42.

The brush 41 comprises an elongated body 43 of square cross-section and a reduced extension 44 of circular cross-section. The body 43 includes a commutator contacting end 45 which is concave. A longitudinal centrally disposed groove 46 is formed in one side of the body 43 and dead-ends at a point just short of the extension 44 to form a shoulder.

The casing 42 includes a metal core 48 which is of square cross-section to receive the brush 41. The core 48 has external threads 49 at one end and internal threads 50 at the other end. At the end adjacent the threads 49 is an inwardly ex-

tending projection 51 of a configuration to extend into the groove 46. A cover 52 of circular cross-section and of Bakelite, or other similar material, surrounds the core 48 throughout its unthreaded extent. An externally knurled internally threaded sleeve 53 engages the threads 49 and maintains a flat ring 54 against one end of the covering 52. The ring 54 has a radially extending lead clamp 55 which securely engages a lead 56.

A cap 58 closes that end of the casing remote from the projection 51 and includes a metal plug 59 and an insulating cover 60. The plug 59 has a reduced annular extension 61 having external threads 62 which engage the threads 50 of the core 48.

A helical spring 63 is disposed within the core 48. One end of the spring 63 encircles the extension 44 and abuts the body portion 43 of the brush 41. The other end of the spring 63 presses against a metal plate 64 which is thereby firmly thrust against the extension 61 of the plug 59. A lead 65 is conductively secured to the brush extension 44 at one end and to the plate 64 at the other end.

Operation

The operation of the novel means for preventing a brush from being ejected from its casing is simple. Considering the modification shown in Figs. 6 and 7, after the lead 56 has been secured in operative relation to the casing 42 by means of the threaded sleeve 53, the brush 41, having the groove 46 in one side thereof, is inserted into the casing 42 from the left (Fig. 6), the grooved side being located so that the groove 46 will be entered by the projection 51. The helical spring is then disposed about the extension 44, the plate 64 is connected to the brush lead 65, and the cap 58 is screwed home in the usual manner. The brush assemblage 40 is then ready for use.

When the brush assemblage 40 is mounted in engaging relation to a commutator 65, the major portion of the brush 41 will be within the casing 42, the helical spring 63 being under maximum operative compression. As the end of the brush 41 is worn away through contact with the commutator 65, it is gradually pushed from the casing 42 by the action of the helical spring 63. After a period of service, the parts of the brush assemblage 40 assume the position shown in Fig. 6, the brush 41, of course, being worn to a much shorter length than is shown. The projection 51, in fitting into the groove 46 and in engaging the rearmost limit of the groove 46, provides a stop and prevents the brush 41 from being completely ejected from the casing 42. The projection 51 and the associated groove 46, therefore, prevent the spring 63 from at any time engaging the commutator 65.

The operation of the modification illustrated in Figs. 1–4 is similar to the above-described operation of the modification shown in Figs. 6 and 7.

The boss 19 shown in Figs. 1–4 is formed by forcing a portion of one side of the core 20 inwardly, which may be effected manually or automatically on a machine. This may be done before or after the covering 24 is added. The projection 51 shown in Figs. 6 and 7 is formed by forcing a portion of one side of the core 48 into a depending projecting relationship. The projection 51 likewise may be formed either manually or by machinery. In the modifications disclosed there are provided simple stop means of similar cross-section which are extremely simple in construction, but which are positive in operation in their cooperative relation with a groove formed in a brush element.

It is apparent that there has been provided a construction forming a part of a brush assemblage which is adapted to fulfill all of the objects and advantages sought therefor.

It is to be understood that the foregoing description and accompanying drawing have been given by way of illustration and example and not by way of limitation, the invention being limited only by the claims which follow.

What is claimed is:

1. A brush assemblage comprising a casing having an open end, a brush slidably disposed in the casing, means urging said brush from the casing through the open end thereof, a longitudinal groove in said brush terminating short of the full extent thereof, and a projection on the casing disposed in said groove, whereby the urging means is prevented from completely ejecting the brush from the casing.

2. A brush assemblage comprising a casing having an open end, a brush slidably disposed in the casing, means urging said brush from the casing through the open end thereof, a longitudinal groove in said brush extending from the end remote from the urging means to just short of the end adjacent the urging means, and a boss formed on the casing of a cross-section and so located to extend into the groove and to abut the dead end of the groove when the brush has been urged into that extreme position to prevent further ejection of the brush.

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