July 7, 1925. 1,545,213

H. R. STUART

ELECTRIC MOTOR

Filed June 26, 1924

Fig. 1

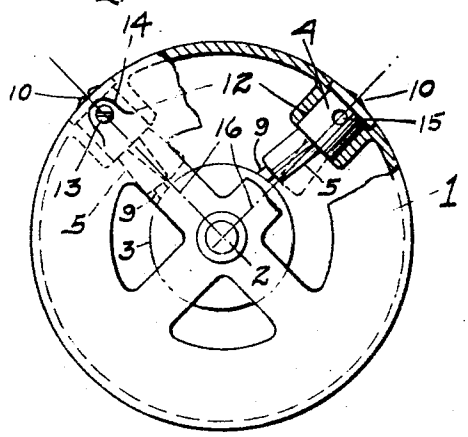


Fig. 2

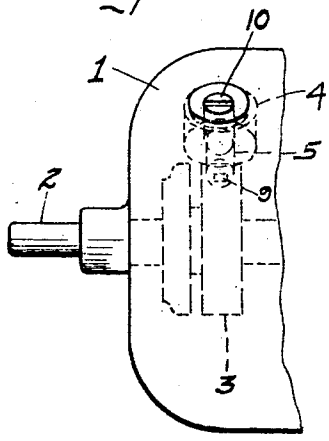


Fig. 3

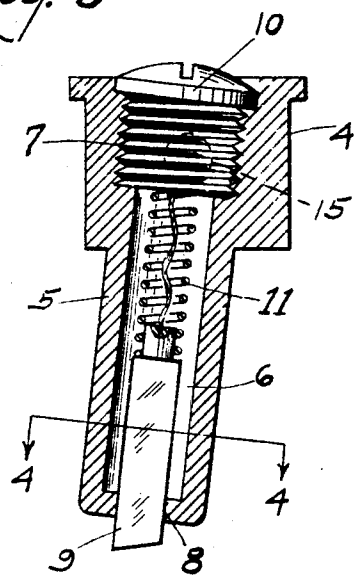


Fig. 4

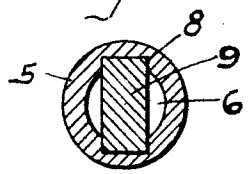
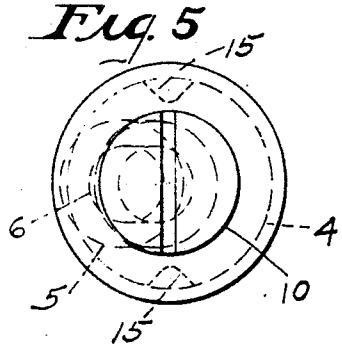


Fig. 5



Inventor

Harve R. Stuart

By Staley & Bowman

Attorneys

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UNITED STATES PATENT OFFICE.

HARVE R. STUART, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE ROBBINS & MYERS COMPANY, OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

ELECTRIC MOTOR.

Application filed June 26, 1924. Serial No. 722,451.

To all whom it may concern:

Be it known that I, HARVE R. STUART, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Electric Motors, of which the following is a specification.

This invention relates to electric motors, particularly to motors of the repulsion induction alternating current type, and the invention especially relates to the feature of changing the direction of rotation of the motor by providing improved means for shifting the brush from one side of the neutral point to the other.

The object of the invention is to provide a novel form of brush holder which may be readily shifted from one side of the neutral point to the other side of the neutral point, a more specific object of the invention being to provide a brush holder so constructed and arranged that the brush may be quickly and readily reversed by rotating the holder in its support.

In the accompanying drawings:

Fig. 1 is an end view of a motor showing the brush holders embodying the improvements, the motor casing being partly broken away and shown in section.

Fig. 2 is a side elevation of one end of the motor and its casing showing one of the brush holders.

Fig. 3 is a vertical section of one of the brush holders and its brush.

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

Fig. 5 is an end view of the holder.

Referring to the drawings, 1 represents the casing of the motor, 2 the armature shaft, and 3 the commutator. Each of the brush holders consists of a main cylindrical shell 4 having an integral hollow extension 5 which projects from the shell at an angle. An opening 6 extending entirely through the shell and extension is formed during the process of casting, the upper portion of this opening in the shell being enlarged and threaded as indicated at 7 while the walls of the remainder of the opening are milled to form two diametrically-opposite straight sided grooves 8 to receive the brush 9. The opening in the shell 4 is closed by a threaded plug 10 and interposed between the plug and brush is a coil spring 11 to apply pressure to the brush.

The cylindrical shell 4 of each of the holders is mounted in the casing 1 of the motor, the casing being provided with an opening 12 for each holder within which the shell portion is rotatably mounted, the holder being held in different positions of adjustment by a set-screw 13 which is threaded in a boss 14 formed integrally with the casing and adapted to engage in either one of two diametrically-opposite recesses 15 formed in the walls of the shell 4. Each of the holders is so disposed in the casing that its axis of rotation is perpendicular to the axis of rotation of the armature shaft while the brush channel of the holder projects at an angle to said perpendicular line, which line also represents the neutral point.

When it is desired to reverse the direction of rotation of the motor, the set screws are loosened and each of the brush holders revolved 180 degrees, which by reason of the angular relation which the brush channel bears to the axis of rotation of the body portion 4, will locate the brush on the opposite side of the neutral point indicated by the line 16. After the brush holders have been relocated the set-screws are tightened to hold the holder in their new position.

While I have shown the brush channels of the holders projecting at an angle to the axis of rotation of the holder in the motor casing, I do not desire to be limited to this particular arrangement as equally good results may be obtained by otherwise offsetting the channel with respect to the axis of rotation so that in one position of the holder the brush will lie on one side of the neutral point and in the other position of the holder the brush will lie on the other side of the neutral point.

Having thus described my invention, I claim:

1. In an electric motor, a support for a brush holder, a holder and its brush rotatably mounted in said support with the brush supported in a position at one side of the axis of rotation of said holder, for the purpose specified.

2. In an electric motor, the combination, with a commutator, of a support for a brush holder, a brush holder rotatably mounted in said support with its axis of rotation on the neutral line, and a brush supported by said holder in a position at one side of the axis of rotation thereof so

that rotation of said holder will place said brush on one side or the other of the neutral line.

3. In an electric motor, a support for a brush, a holder consisting of a cylindrical shell rotatably mounted in said support, and an angularly projecting channel extension, and a brush carried by said extension.

4. In an electric motor, the combination, with a commutator and support, of a brush holder rotatably mounted in said support with the axis of rotation thereof coincident with the line representing the neutral point, said holder having an angularly projecting channelled extension, and a brush mounted in said channelled extension whereby rotation of the holder will place the brush on one side or the other of the neutral line.

5. In an electric motor, the combination, with a commutator and support, of a brush holder consisting of a cylindrical shell and an extension, said shell being rotatably mounted in said support together with means for holding the same in different positions of adjustment, said extension being provided with a channel, a brush mounted in said channel, a plug threaded in said shell, a spring interposed between said plug and brush, said extension being projected at an angle from said shell and the axis of rotation of said shell being coincident with the neutral point whereby said brush may be placed on either one side or the other of said neutral point by rotation of said shell.

In testimony whereof I have hereunto set my hand this 16th day of June, 1924.

HARVE R. STUART.